November 1979

Smithsonian

Terra-cotta general of China's buried army gazes back over 20 centuries (p. 38)

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November, 1979

Smithsonian

Volume 10, Number 8

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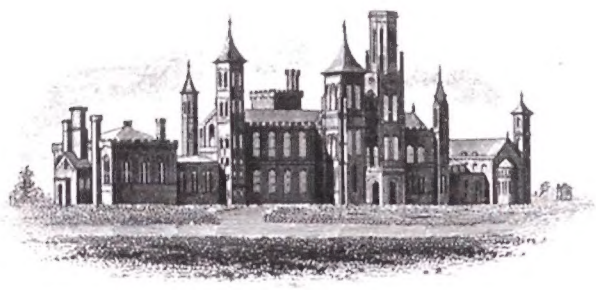
Secretary Ripley's comments

The view from the castle



Our traveling exhibitions go all across the country (and around the world), thus expanding the audience for our assets

We are always being asked—in Congress, in letters, in editorials in out-of-town newspapers—why we don't share our assets, our exhibits, more widely. "Why do you keep them all bottled up in Washington?" the refrain goes. The answer is that we don't. The Smithsonian's Traveling Exhibition Service (SITES) is a little-known but powerful instrument for bringing the riches of our museums to all the people in the 50 states, and even beyond.

SITES was launched 27 years ago under the pioneering direction of my predecessor, Dr. Leonard Carmichael, and his assistant, Mrs. John A. Pope, who became the first director of the program. In its earlier days, SITES organized relatively large exhibitions (usually art-oriented, although sometimes they took in the decorative arts or archaeology) which could travel only to the big city museums.

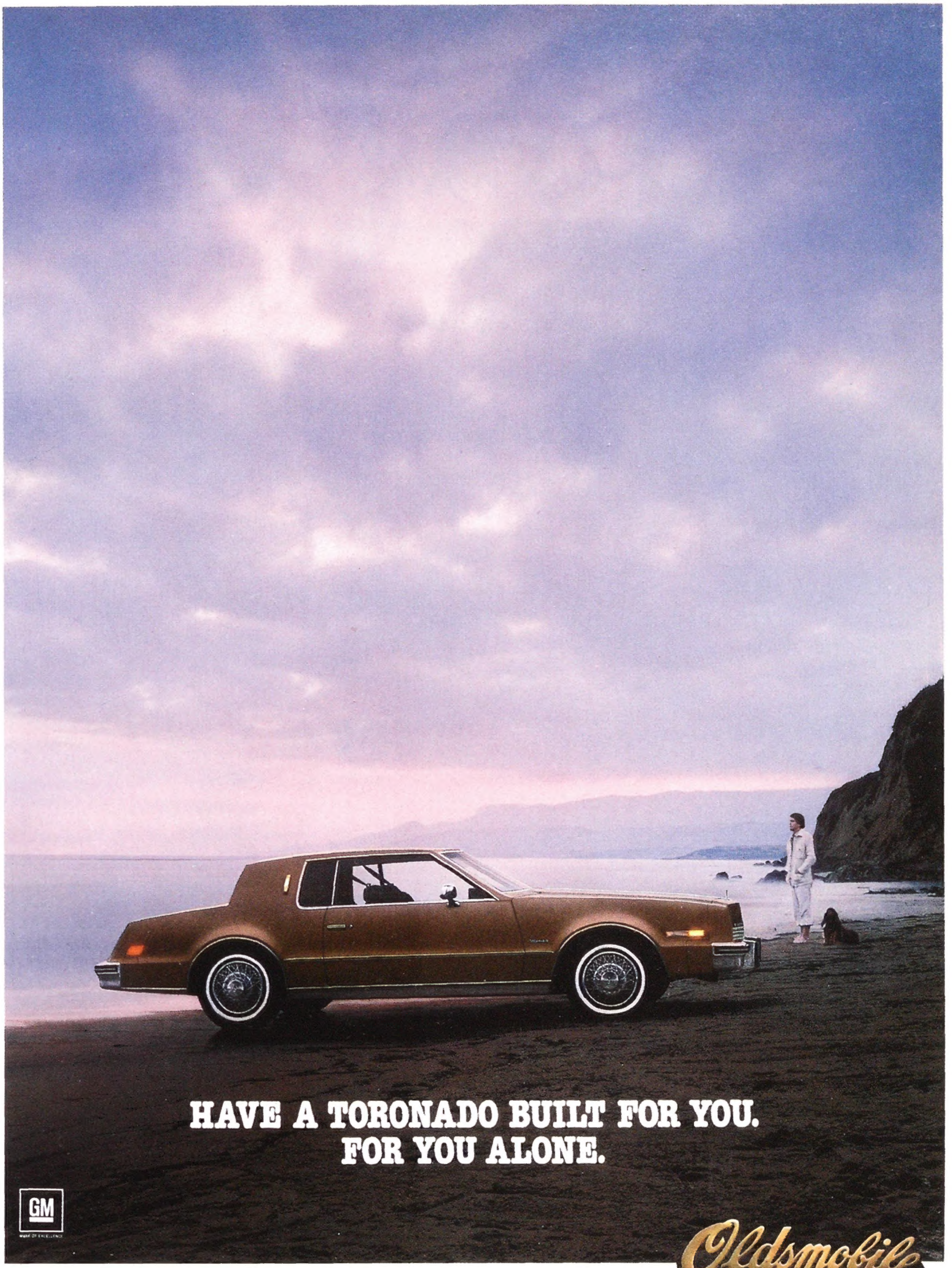
Nowadays these major museums usually work up their own exchange exhibitions, national or international, and have the resources to do it quite independently of the Smithsonian. Public foundations, such as the National Endowments for the Arts and for the Humanities, and corporate sponsors now provide much of the support for these gala shows, which are immensely popular—and therefore limited to the big centers, where huge crowds can be accommodated.

We began to feel in 1964 that the Smithsonian, as befitted its broad and varied activities, should undertake a wider spectrum of low-cost, low-fee exhibits on history and science as well as art. These shows could perform an educational role in schools, libraries or cultural centers in smaller communities away from the big cities. And so, under its succeeding directors, Dorothy van Arsdale and Dennis Gould, SITES started to diversify its offerings.

The Bicentennial years gave great impetus to traveling exhibitions, providing our organization with an opportunity to become the official collaborator and host in the United States for shows mounted by other countries for this celebration. In fiscal year 1974, SITES began to receive a small amount of federal support, which now amounts to about one-fifth of its total annual budget of more than $800,000. In 1978, SITES reached 47 of the 50 states with 213 exhibits, ranging from art to zoology, which were seen by an estimated six million persons. Exhibits also traveled to Canada, New Zealand, Australia, Norway and the Netherlands. (Every month a representative listing of shows currently on the road is included in the "Smithsonian highlights" section of this magazine.)

Increasingly, this form of outreach is meeting the Smithsonian's objective of spreading its resources around the world. Although many exhibitions are still drawn from outside sources, it is my hope that more and more we will be able to develop shows on the themes of our own exhibits on the Mall. Our National Associates should think of subjects for cooperative exhibits with museums in their own communities. Tell us what you want, and I feel in my bones that we will be able to comply. For, as Emerson said, "A man is relieved and gay when he has put his heart into his work and done his best." I think SITES and its 20 dedicated staff members would agree.

S. Dillon Ripley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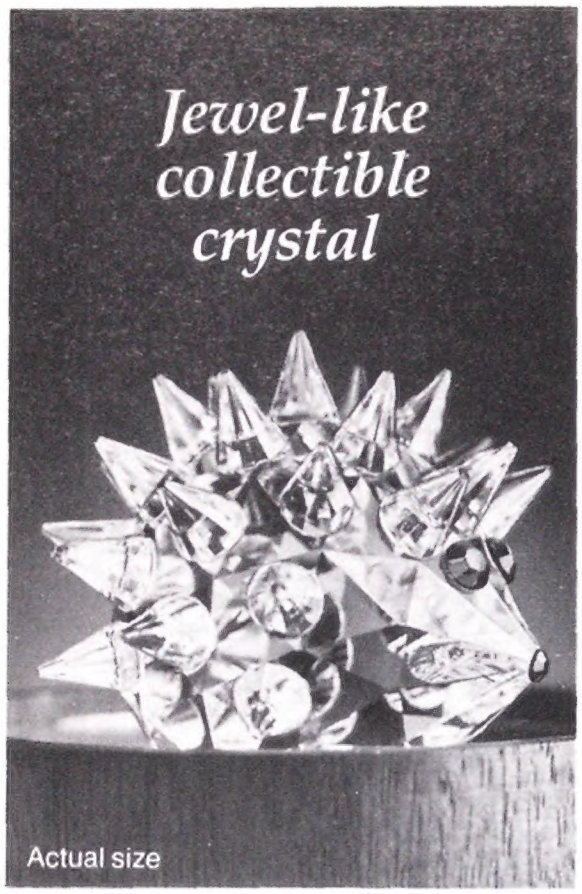

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Around the Mall and beyond

The flight from Miami to Panama would, we were told, leave an hour late. Would we please wait in the hot, tacky little "passengers only" room? So we did. And along came the next announcement, as inevitable as the dropping of the second shoe: Takeoff would be delayed *three* hours, and would we all please wait. . . ?

No, we would not. We paraded to the main terminal, and in the sudden bond of shared truancy began speaking to one another. Why, I was asked, was I bound for Panama? "To visit the Smithsonian Tropical Research Institute," I answered, and my words provoked interest.

"You guys will be the only U.S. citizens in the old Canal Zone pretty soon."

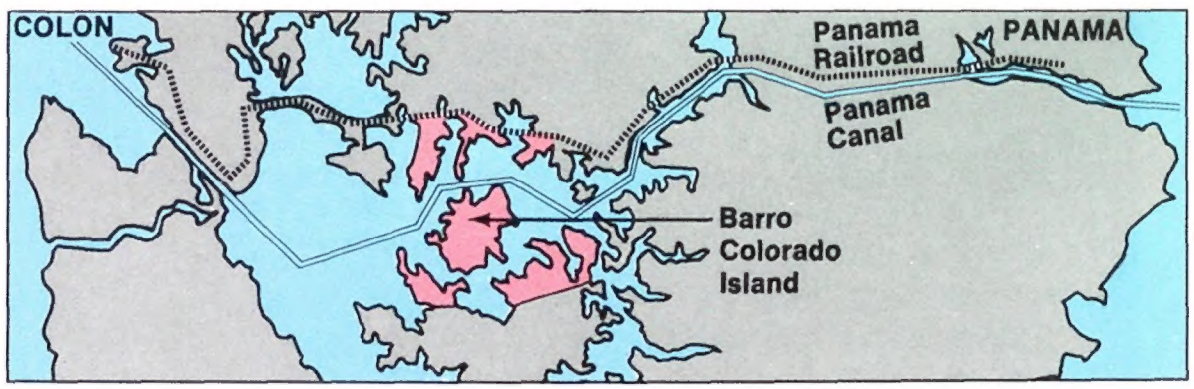
Well, much politics has washed around the beleaguered Panama Canal Treaty since then, and even under its terms "pretty soon" means 1999, and Lord knows what will finally come about. But, essentially, that was why I wanted to see STRI. For under the terms of one part of the Treaty, the Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere, the Panamanian government has expressed interest in the Smithsonian establishment, full appreciation of scientific work being carried out in our facilities and a willingness to enlarge the amount of land set aside for Smithsonian use.

"The area known as Barro Colorado Island in Gatun Lake in the Republic of Panama is declared to be a Nature Monument," says an agreement "pursuant to" this convention. "Upon the termination of the Panama Canal Treaty . . . this Nature Monument shall also include the adjacent areas known as Orchid and Point Salud Islands; Bohio, Buena Vista, and Frijoles Points; and the smaller islets adjacent to them. . . ."

What would this mean to the Smithsonian? If I could ever make it down to Panama, I hoped to find out.

The plane eventually took off. The flight got in very late, but there was still room at one of the hotels not entirely devoted to gaming tables. Next morning, STRI Director Ira Rubinoff picked me up and whisked me to headquarters.

Smithsonian tropical research is carried on in a number of places around the world; the most permanent facilities are in Panama. At the Pacific end of the Canal is the Naos Island Marine Labora-



Gatun Lake's Smithsonian areas—the island and the new areas adjacent to it—are in pink.

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tory, in which our scientists and others who use our stations occupy a number of buildings within Fort Amadon. We are tenants of the U.S. Army, which, says Ira, is a fairly suitable arrangement as long as the Army brass are interested in cooperating with the researchers.

Right now, they appear to be. We rattled out to the Naos station in a STRI van—Ira and I now joined by Dr. Nicholas Smythe, environmental officer. A number of small islets are linked by a causeway, and along it moved an Army truck with a handful of soldiers cleaning up trash. I was driven up a steep little hill to what had been a 16-inch gun emplacement, guarding the Pacific approaches to the Canal. It is now used for the study of the sun's spectrum—and also to show visitors just where they are. Over yonder is Panama city, out there is the Pacific, the buoys mark the entrance to the Canal, those peaks are in Darien, where, according to Keats' imprecise history, "stout Cortez" stood "Silent, upon a peak. . . ."

Nick Smythe, ever the naturalist, brought me back to closer focus by pointing out two iguanas in the canopy of a tree on the hillside below us. Apparently they like to breed in the old sand barrels that were originally positioned around the emplacement to protect it from enemy shells which never came.

There is a good deal more life on view down in the "wet lab," an open shed on a pier off the largest islet. Ira showed me, with pride, a pair of sea snakes, the very poisonous ones that might migrate from the Pacific if a sea-level canal is built (SMITHSONIAN, December 1971).

I was also shown tanks where studies are being carried out on growing coral, on viciously spined sea urchins, on *Acanthaster,* the crown-of-thorns starfish (SMITHSONIAN, April 1970).

"After the treaty, what?" I asked.

"Panama could use these islands however it wants," Ira said. "But the Smithsonian setup here would go right on as before. Instead of being the Army's tenants, we would be the Republic's."

I didn't have the time to visit at length at Naos nor to get across the Isthmus to Galeta Point, a coral reef facility on the Atlantic side. Barro Colorado with its prospective new areas engaged me. We stopped back at the STRI laboratory, which used to be the Gorgas Laboratory. Anyone old enough to remember Paul de Kruif's book, *Microbe Hunters,* which overwhelmed a generation of American boys with the glamor of medical research, knows that Gorgas was the Army doctor who, with Walter Reed, wiped out the dreaded yellow fever ("Yellow Jack," we breathless de Kruif fans learned to call it), first from Cuba, then from Panama. Gorgas did it, incidentally, by wiping out the mosquitoes which used to carry the disease, and on looking back on my brief visit to Panama, I cannot remember one single mosquito.

Barro Colorado sprawls in the lake, isolated when waterway was formed. Surrounding islets and peninsulas, richly forested, are available to STRI.

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Drs. Rubinoff and Smythe, one ear politely tipped toward my enthused ramblings about *Microbe Hunters,* cleaned up their duties to the point where they could break loose and haul me up the canal to Barro Colorado. We drove to a dredging camp and there found a Smithsonian boat—a smallish outboard—waiting for us in the care of Pedro Acosta, STRI game warden. And then, there we were out on Gatun Lake—and everything I had ever heard about the Panama Canal began to come to life.

Gatun Lake—formed by deliberate flooding of the Chagres River so the man-killing job of digging the cuts could be minimized. Along its edges stand stark tree trunks, and stumps of fallen trees are a constant hazard to small boats that venture along the shore. There is hardly a sign of life on those shores, though some people have rented the right to erect a small camp—an open-walled lean-to—for recreation. Otherwise, you are surrounded by rain forest and wild savanna.

And then, far off toward the end of the lake, you see a huge structure that seems to be moving, incredibly, toward you. And it takes a few seconds (when you are a newcomer) to realize that this is a ship —a tanker, perhaps, or a container vessel —chuffing along on its way between Colón and Panama, between ocean and ocean.

Just on the North American side of the Canal (providing cardinal directions in the Isthmus is strangely confusing because of the writhing it goes through: South America can be reached from the Canal's northern bank; the Pacific feeds its eastern end) and very close to it sprawls Barro Colorado, a 6,000-acre island, blob-shaped with many points and bays, lofty and densely wooded and unsettled except for the meager impact of the Smithsonian.

"Barro" in this case means mud or clay; "colorado," of course, is reddish. I arrived in the rainy season, when three or four showers a day swept across the forest, and certainly most of the island seemed to consist of reddish clay, devilishly slippery. The boat put into a charted channel where submerged stumps were carefully marked; we eased through masses of floating vegetation, the outboard beating it like a blender, and then I was allowed ashore to stretch and shake out cramps and head up the hill for lunch.

Straight up the hill. Steep. About a quarter of a mile of little concrete steps, designed years ago to keep notable scien-

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tists from slipping on the wet clay and skidding all the way back into Gatun Lake. Panting and newly drenched, I arrived in time to share thick, beefy soup and superb salad and limeade by the gallon. I sat at a plain deal table with a number of sweaty, hungry young people, men and women, who grunted, not impolitely, at me and then tended to the science of nutrition. Only after the meal, when conversation took tentative root among my companions and they shyly began to explain a little of what they were up to, did I realize the weight of scientific intellect that surrounded me.

I shall not try to describe the various researches that are now going on at Barro Colorado. My friend and colleague Don Moser did so, excellently, in our issue of August 1975, and the projects and people haven't changed much. The place is a rugged and demanding field station for biologists, botanists, zoologists, ecologists —you name it. Their disciplines are varied, but they all have great legs and I assure you there's not an ounce of fat among them.

On the island they find some 465 species of land vertebrates to titillate them, plus about 1,300 species of vascular plants. Cut off from the mainland when the waters rose, these life forms are uniquely pure, with all the implications of a limited area. Species compete fascinatingly for survival. Yet it is this limitation that makes the prospect of additional land so attractive to science: a broader base; a more diversified inventory of plants and animals, new species, new soil types and an enlarged gene pool. Another thing: protection of these wild lands from hunting and development.

We set off in the small boat to visit a couple of the proposed new Smithsonian areas. In one case we simply eased our little craft into a tiny jungle inlet, barely disturbing the mirror surface of the water as we felt our way among vine-draped trees and around giant looming stumps reaching up for us in the clear water.

Since I was a small boy I have wanted to do just this—explore a jungle waterway in silence and with as little impact as a boat can provide. And I must say it was marvelous—a secret intrusion into a world of strange shrieks and flutters and crashings among branches; of footfalls on the forest floor and sudden splashes in the stream; of smells of death and quick life; of tantalizing views of something

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This new and original work of art has been designed to the Society's commission by the internationally renowned wildlife artist Peter Barrett. The Goldfinch is portrayed clinging to the branch of an almond tree that's aburst with blossoms. The vivid scarlet, black and white of the head ... the bright bars of yellow upon the wings ... the delicate formation of the tail feathers ... all are depicted with realism and accuracy, in authentic natural color.

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The European Goldfinch, by Peter Barrett, will provide a fascinating focal point of beauty for your home. It will be a conversation piece of which you will never tire.
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To reserve *The European Goldfinch,* you should act promptly. We would ask you to be sure that your Reservation Application is postmarked by November 30, 1979.

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Sculpture shown smaller than actual size. The complete sculpture stands approximately 6½ inches (16cm) in hei

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moving in the dark forest—there! No, right *there*!

At another inlet we pulled ashore and set out on foot for a few miles. The heat was mightily heavy, the humidity suffocating. Our boots slipped, then caught on roots and sent us sprawling. We would reach for a small tree for aid, then see it was sheathed in quills like a porcupine. Insects buzzed hungrily around us. The rain would suddenly come, and we would take off our shirts and bathe in it.

Bright, ghostly butterflies danced around us, and tiny birds hung on twigs beside our very faces to have a good look, for they had not seen our species before. We did not see jaguars, although we might have. We did not see snakes, although we all watched where we stepped among the vines.

The additional land, earmarked for STRI, that I explored (feeling like stout Cortez, all right) will certainly add a new dimension to our researches. For one thing, I can vouch that the mud is black instead of being *barro colorado*. Rubinoff and Smythe agree that the Republic of Panama recognizes the value of a green area around the island, that its scientists know the need of more acreage for certain species and appreciate STRI's track record and logical fitness to maintain Panamanian "Nature Monuments."

Yet the Smithsonian will need game wardens to protect these wilderness tracts, possibly fencing, certainly a deal of other special requirements. And what exactly does our work in the tropics prove?

Back on the island, I spent a day simply tramping along precipitous trails among the towering rain-forest trees, seeing the small impedimenta that scientists use for their work: nets for snaring bats, screens for catching the litter from trees, tubs for measuring the mass of fallen leaves. I climbed the 42-meter tower (terribly scary) that lifts you right into the canopy of the forest so that you are a part of it. I heard the howler monkeys at their matins —5:15 A.M.—their hooting hymns rolling across the island and back as one group picks up the chorus from another. I "still hunted" the forest and saw agoutis, wild pigs, an armadillo, some cebus monkeys and a coati.

I came away with the feeling that every small study carried out here must be judged in context—and the context is the structure of life. Yes. It's important.

—EDWARDS PARK

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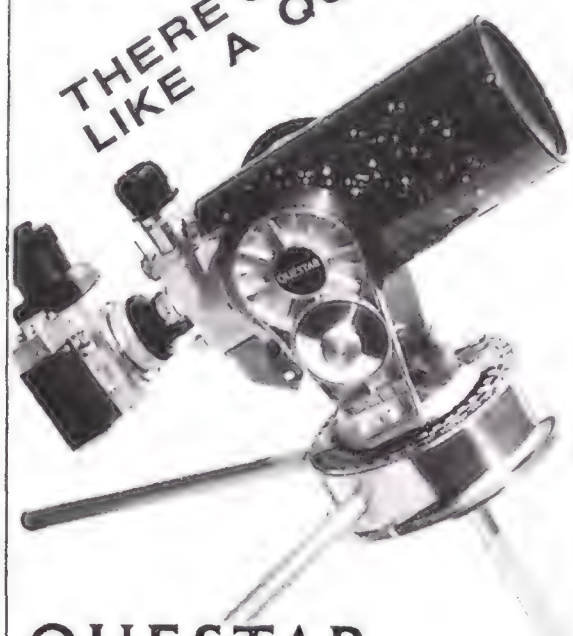

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Letters to the Editor

Pandas

Dear Sir: Regarding your September issue, I'm no Konrad Lorenz but I took some biology courses and I've got good common sense. I've figured out why pandas seldom mate in captivity. They are embarrassed by the preposterous names given them by callous zoo keepers and are refusing to mate in protest. Who can blame them, with tags like Ling-Ling, Hsing-Hsing or Chi-Chi? Would you have the nerve to approach some nymph at a party if you had to introduce yourself as Ping-Ping? I know I couldn't bear it.
Robert Waldner
Kansas City

Dear Sir: In a recent column in the *New York Times,* Takao Tokuoka of Japan's Mainichi newspapers deplored the Japanese press' and people's near-hysteria over the death of Lan Lan, the pregnant female panda at the Tokyo zoo. He wrote that ". . . 2,200 people attended a farewell service. . . . More than 400 bouquets were offered, and almost 2,000 cables and letters of condolence poured in. The First Secretary of the Chinese Embassy read a memorial address, as the specially composed sentimental tune 'Sayonara, Lan Lan' played in the background." Seven years ago, "zealous Japanese began forming queues at the zoo entrance three days before the pandas' first 'public appearance'. . . . Then began the long wait . . . for progeny. . . . When [Lan Lan] and Kan Kan finally mated, national newspapers defied unwritten codes of decency to carry photos of the copulative act."
Martha Macauley
New York

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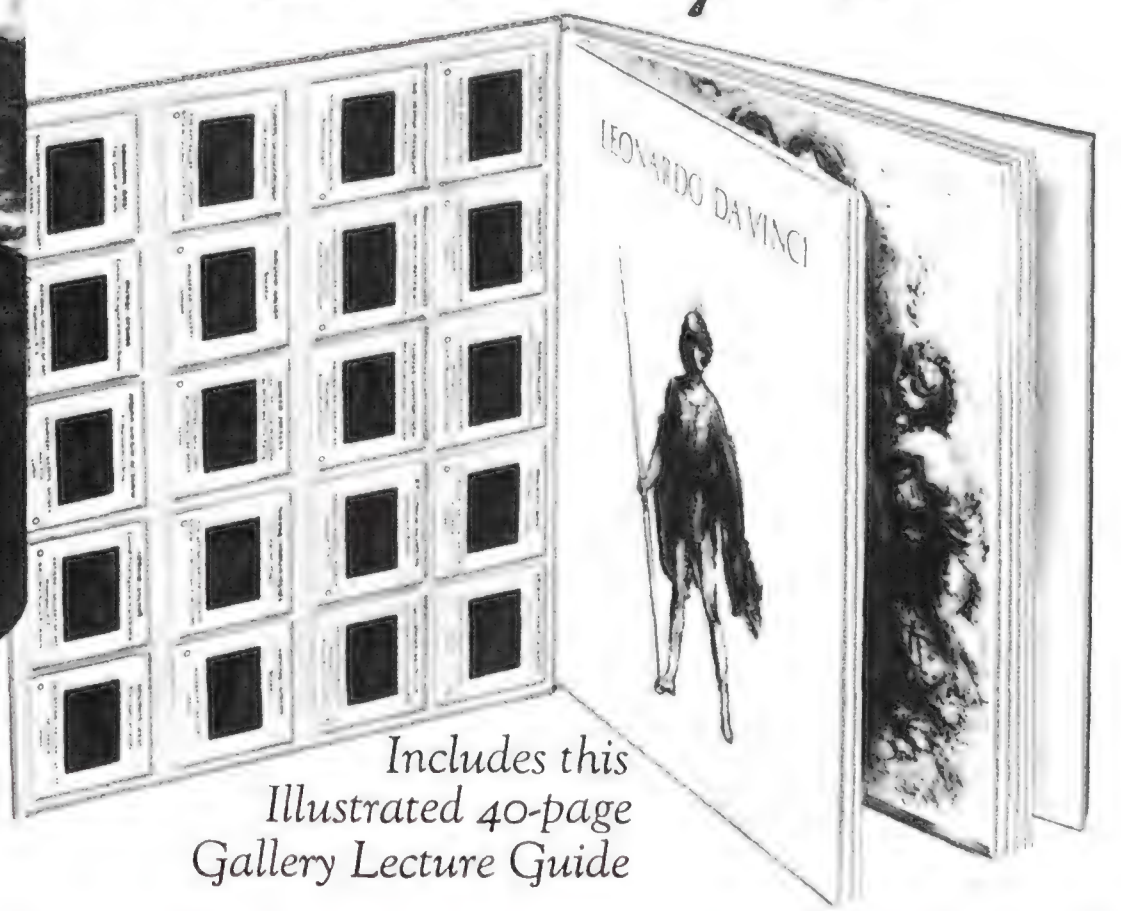

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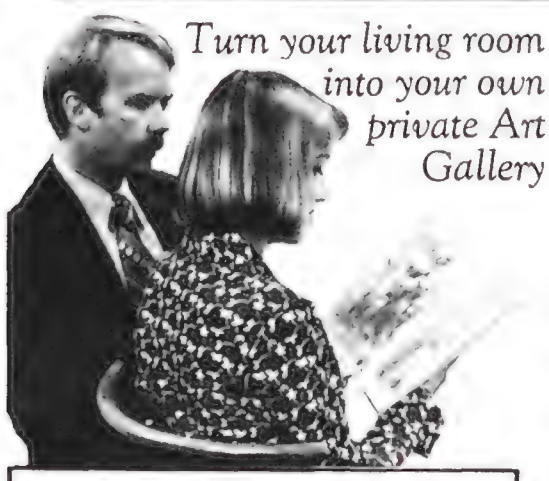

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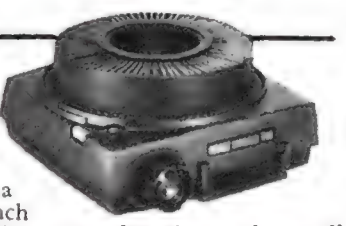

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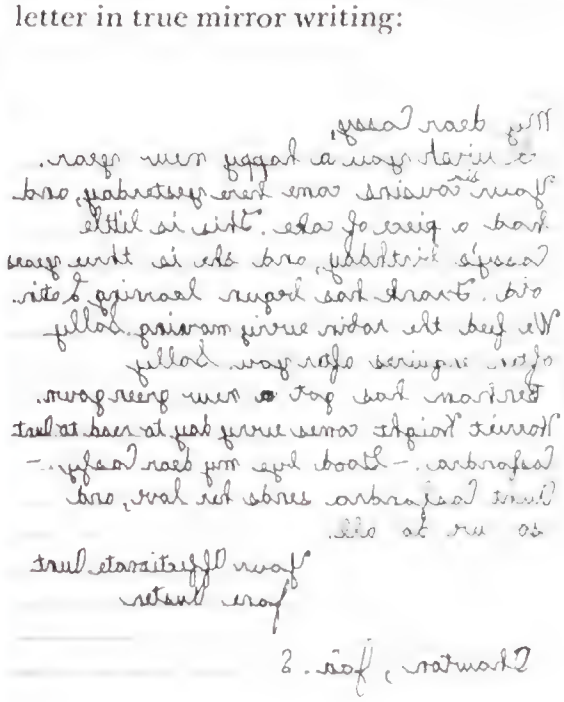
Dear Sir: Thanks for the sensitive and endearing panda pictures, especially the cover, which depicts such comfort and contentment. Why not make a poster?
Edwin M. Bebee
Tucson
We have done so. Posters of the September cover are available. See p. 207. Ed.

Morgan Library

Dear Sir: I was disappointed that Mr. Shenker failed to mention, in your September issue, that in addition to his passion for collecting art and books Pierpont Morgan was also an avid collector of gems. In fact, he was such a good customer of Tiffany & Company that their gemologist, George F. Kunz, bestowed the name "morganite" upon pink beryl, a name which has stuck to this day.
John Miller, lapidary
Chapel Hill, North Carolina

Dear Sir: Jane Austen's letter on page 79 does not represent mirror writing. It is an example of backward English. Here is her letter in true mirror writing:



Jessie Sundgren
Leonardville, Kansas
Read in a mirror this letter and Miss Austen's to find two words of the latter which are missing from Mrs. Sundgren's otherwise faithful transcription. Ed.

Edison

Dear Sir: I have two carbon-filament globes that were placed in the front hall chandelier of my grandfather's home in Lynchburg, Virginia, when the house

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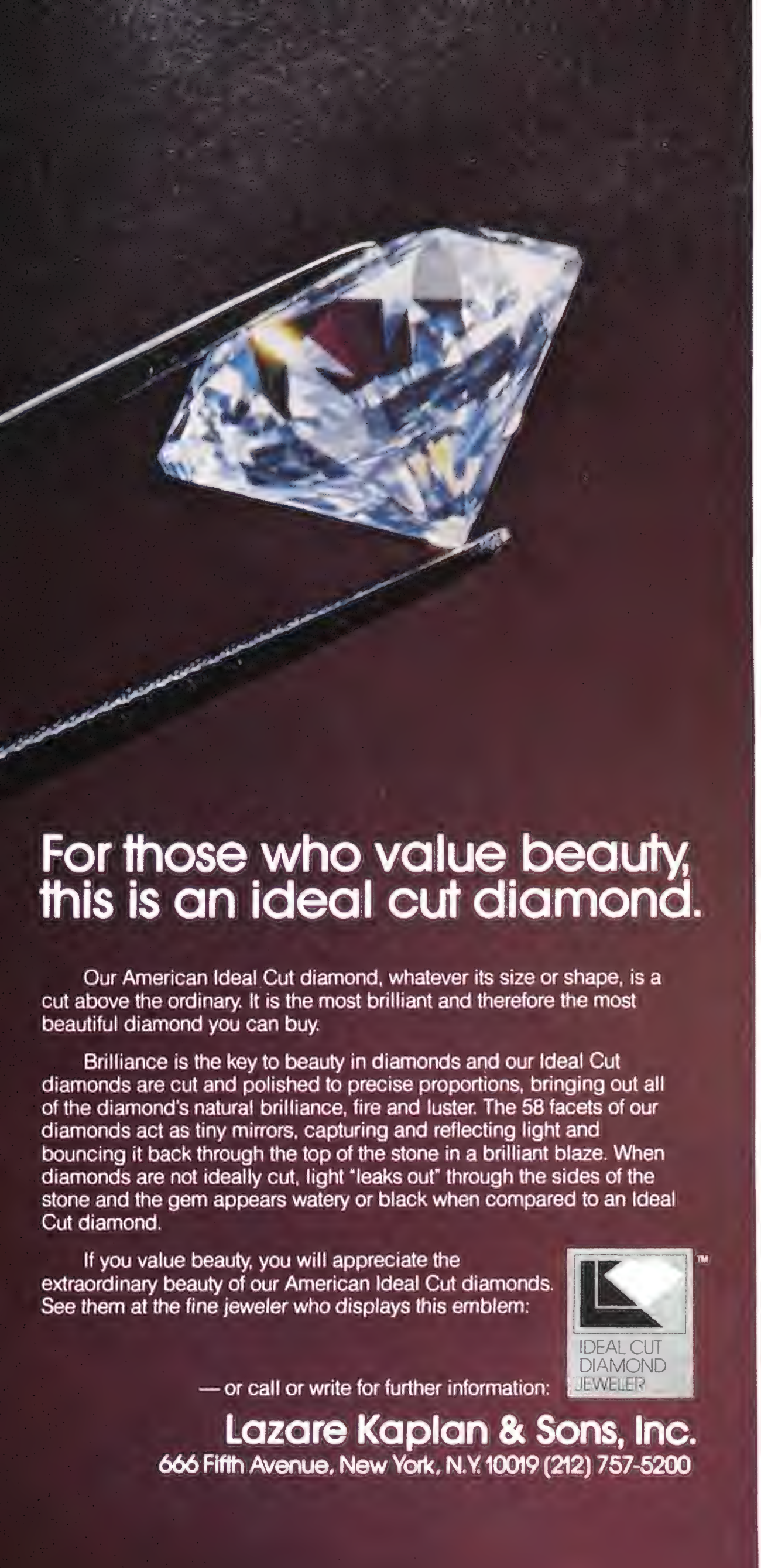

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William C. Noell jr.
Suffolk, Virginia

Dear Sir: No photographs were taken of the 1929 Golden Jubilee of Light Banquet, and so in 1935 the elder Henry Ford commissioned Ford artist Irving Bacon to make a pictorial record.

In Bacon's reminiscences, he tells of sending letters to surviving participants asking for contemporary photographs and recollections of who sat next to or near them. Hence, there were 266 recognizable portraits in the painting, which took three years to finish.

Your caption notes that the Mayo brothers, Charles and William, attended. According to the official guest list, Charles Horace Mayo did attend, but William James Mayo, his older brother, did not. The W. B. Mayo noted was William Benson Mayo, for many years Henry Ford's engineering/aviation troubleshooter.

David R. Crippen
Reference Archivist, Ford Archives
Henry Ford Museum
Dearborn, Michigan

Edsel Ford (above, left), wife (right) and sons, elsewhere in painting, did not attend dinner. Childhood disease of one of boys quarantined entire family. Ed.

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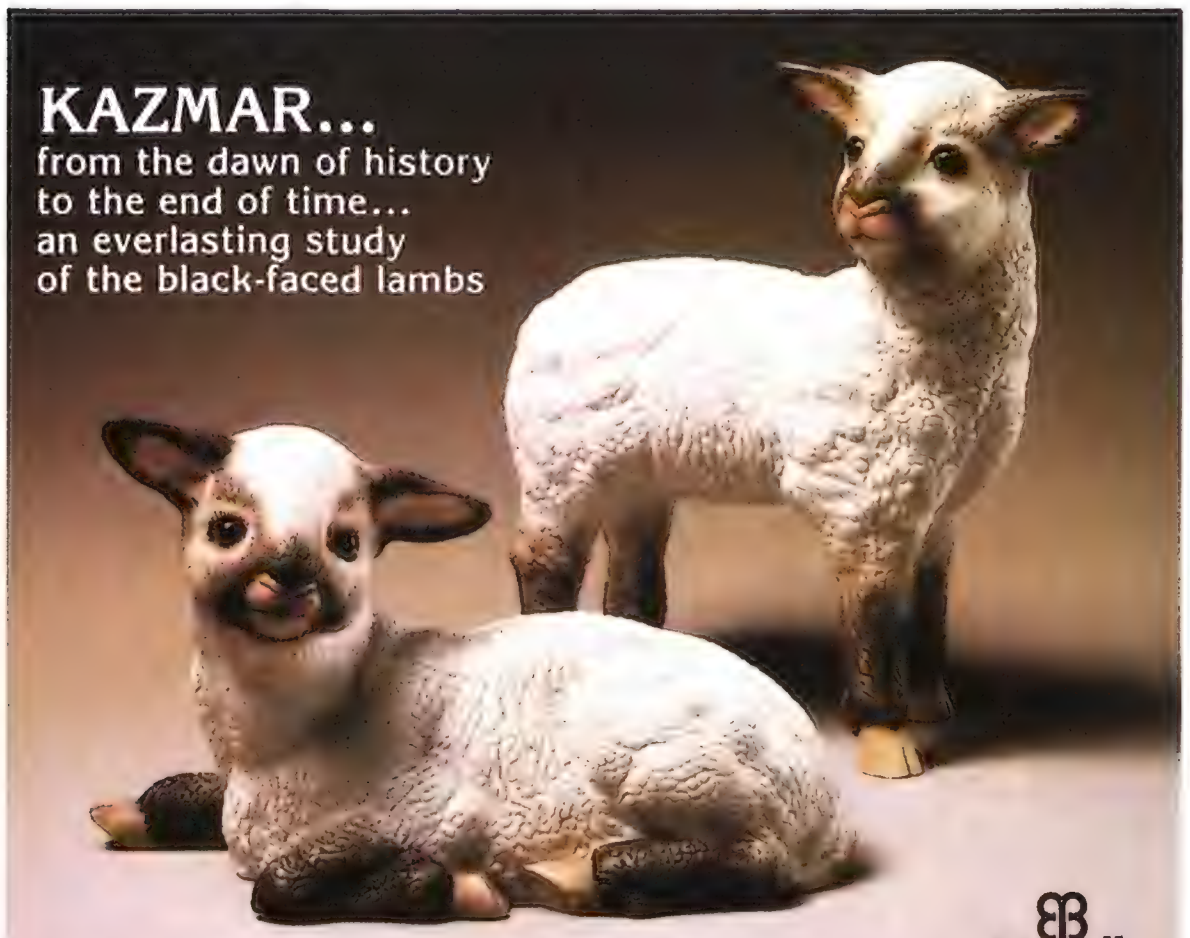

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Norton Simon Museum

Dear Sir: There is no doubt as to the history and authenticity of the statue of the Chola Nataraja in the Norton Simon Museum. After having been buried for hundreds of years, it was ultimately rediscovered, enshrined in a temple, and some time later given to an expert for restoration. The restorer made and returned a copy instead of the original, which then passed through several hands before being acquired by Norton Simon. The statue was the property of the temple and it was the duty of the Government of India to attempt to recover this national treasure, one of the oldest and finest examples of the Chola period, with deep religious significance.

Our office acted as legal counsel to the Indian government in the litigation, which ended in the agreement to return the statue to India. While the ultimate outcome of the negotiations was acceptable to all parties, it was not achieved without vigorous legal action.

Robert Delson
New York

Dear Sir: Isn't it enough that our beautiful Pasadena Museum of Modern Art was taken over? Must the former Board be made to seem ignorant, stupid and flamboyant? There was no word of their achievement in building such a museum as a community effort, and only a passing reference to the outstanding collection, the "Blue Four." Those "fingerpainting sessions" were a fine opportunity for the young children of Pasadena to participate in a variety of creative activities. They continue today, in a new location.

Marney Wood
Pasadena

The messy world of purses

Dear Sir: Some time ago I wrote an ode to the purse. It is, in part:

". . . You might spot a reticule
Next time you're at the zoo . . .
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After all, primitive man obviously got the pattern from the marsupial—and I wouldn't question its maker.

Patti Parks McClain, curator
The Museum of Vintage Fashion
Oakland, California

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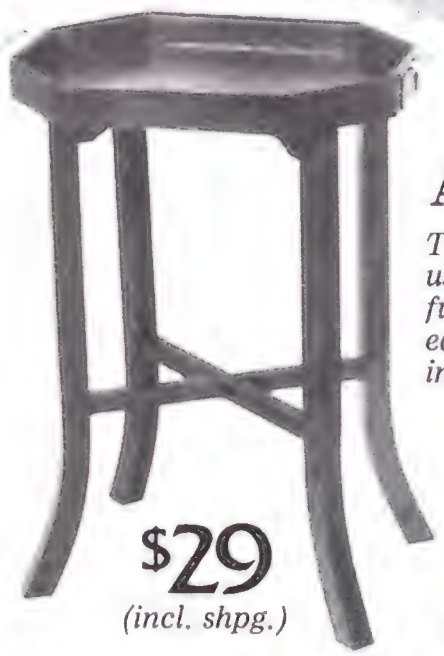

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Dear Sir: Looking for an alternative when I decided pockets were inadequate, I dug into the closet and retrieved a well-worn leather (remember leather?) camera case. It does a great job with pipe, tobacco, eyeglasses, wallet, notebook, keys and whatever else seems necessary. This is my "dress" purse, for trips to New York, attendance at funerals and office conferences. On less formal occasions I use what may have been a World War I officer's map case.
Julian N. Jablin
Skokie, Illinois

Around the Mall

Dear Sir: You might like to know Mohini is far from gone. Parts of her body have raised questions that may keep scientists occupied as long as Mohini herself held the public's attention.

I learned of her death when Dr. Richard Montali, a veterinary pathologist at the National Zoo, called to ask if I were interested in studying a tiger's brain, since I do research on hearing in a Neurological Institute laboratory at the National Institutes of Health.

Mohini was marvelous to behold in life and sections of her brain, cut microscopically thin and stained with selections from the histologist's bag of tricks, are likewise marvelous to behold. More important, the structure of a nucleus far down in her brain has knocked our notions about that into a cocked hat.

When someone unravels the puzzle Mohini's brain presents, we shall know a great deal more about tigers and perhaps a little more about the human brain.
Joe C. Adams
Senior Staff Fellow
National Institutes of Health

Phenomena

Dear Sir: Concerning the article by James K. Page jr. on the Greater Rheas, his stereotyping old-fashioned sexist attitude toward women shows too strongly. His words describing the females: "flagrant, 'brazen hussies', battle-ax, hanky-panky." Would Mr. Page apply the same terms to the male species? I think not.
Susan Flanary
Cincinnati, Ohio
Mr. Page assures Ms. Flanary he has used similar terms in regard to male behavior in the past. Ed.

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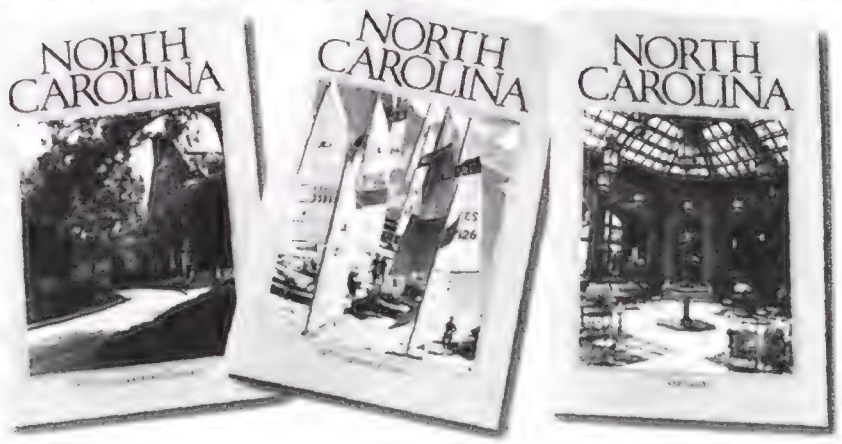

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Phenomena, comment and notes

The latest from brain researchers, why some female songbirds are silent and how daughters recognize their fathers

It began with a canary, acquired as a small-scale replacement for an aged canine companion. The canary was subsequently killed by a three-legged cat, which was in turn promptly given away to a friend who lost it. Prior to its liquidation the canary metamorphosed—by a reproductive mode yet to be described in biology—into approximately 25 assorted finches, which make up my wife's aviary. This aviary has been a matter of concern to me, not because of the peculiar needs of finches (freedom from drafts, quantities of exotic and therefore expensive seeds, and an endless supply of ferns to defoliate) but for reasons of propriety. The aviary, in short, is a hotbed of licentiousness—hardly, I keep saying, the kind of example one wants to present to a houseful of presumably innocent teenaged women.

Among the earliest colonists in the aviary were a pair of zebra finches, rather common avicultural subjects originally from Australia (illustration, p. 30). They are self-confident little birds, sometimes almost aggressive, and the male has an insistent and rather loud buzzing song that reminds me of a cicada on a hot summer night.

Of all the kinds of finches in the aviary, these were the most likely to be found *in flagrante,* before long producing a brood of four, including one daughter. *Now,* I thought, the truly inappropriate would take place. In the close confines of the

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A male zebra finch, left, adds style to song while the female never sings.

aviary, pressing desire would overcome evolutionary common sense and before long we would have (gasp!) inbreeding, perhaps parent-child inbreeding.

You can imagine, then, how I might have felt when, in the course of dutifully checking out the monthly scientific literature on your behalf, I chanced across a report in *Nature* (Vol. 280, No. 5721) on this very delicate subject and in reference to this very species. Oblivious to the maniacal nattering of an ignored parrot (the aviary, you see, is expanding), I plunged into the latinate prose of *Nature*. This is a rather long windup for a soft pitch, but I consider the environment into which insight bursts very important. Put it this way: it may have been an accident that an article entitled "Long-term recognition of father's song by female zebra finches" leaped out from the gray type of *Nature*, but my mind was prepared for the accident. I was, to be frank, nervous about zebra finches.

Here then, at last, is the pitch. David M. Miller, who works in the North Carolina Division of Mental Health, appropriately enough, but whose experimental work was done in Germany, has found that female zebra finches remember the songs of their fathers even after two months of separation.

Now, you must understand the theoretical framework in which this datum falls. Proper scientists, although they may tolerate some inbreeding to accentuate desirable traits in racehorses, cattle and

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plants, feel that mating with a near relative is bad news in the long run. They also feel quite certain that mating with another of a far distantly related but similar species could also be bad news.

Miller plunged into it anyway, capturing zebra finch daughters after what might be called childhood and when they were about ready to conceive their own progeny. He played recordings of their father's song at one end of the cage and, at the other, the very different song of another male zebra finch. (Daughters and sons learn the species' song from their fathers and, it seems, there is considerable personal style among males.) In a related experiment, females heard their father's song and the quite similar song of a fairly close relative.

In both cases, the females spent the most time at the father's loudspeaker, no doubt cocking their heads perkily one way or the other as do my wife's finches. Thus we can conclude, says Miller, that female zebra finches can recognize Dad from far distant (therefore suspect) zebra finches and also make the fine distinction between Dad and a brother or uncle. The capability exists, therefore, to make the proper distinction among a male too close, a male too distant and a male genetically about the right distance.

Just whether this all relates to actual mating preferences Miller says he doesn't know, because his experiment did not carry on with actual performance.

I would be happy to follow through but my wife and I cannot figure out which of the four male zebra finches is the original father because, to us, they all look and sound alike.

Presumably the daughter knows.

Distaff version

Aviculturally, we have uncertainty on all sides. What of the reverse of the foregoing item? Do sons know their mother?

If they do, it is by some means other than song. Two researchers at the University of California at Los Angeles, writing in *Science* (Vol. 205, No. 4407), report on some biochemical work that helps explain a disturbing difference between the sexes—among birds, mind you. That is why it is so frequently found that female songbirds don't sing.

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sex hormones. The regions are much smaller in females than they are in males, and this sexual disparity presumably explains why females sing less. But why the huge difference in the first place? The authors, Arthur P. Arnold and Albert Saltiel, administered radioactive testosterone (the hormone) to zebra finches, both females and castrated males, which were not making any of their own. Even allowing for the difference in the sizes of the brain regions, the males absorbed more. This difference in the brain cells' ability to absorb the hormone may account for the difference in size, the authors suggest.

Birdbrains and others

Since it may seem trivial to worry about the behavior and therefore the brains of birds, it is worth pointing out to glib critics that much of what has been learned about the human brain has arisen from more lowly creatures, such as squid and rats, and even birds. Professor B. F. Skinner made a living out of pigeons and their ability to learn, under scientific requirements called operant conditioning, to peck at certain objects to obtain some food. (It's a bit embarrassing to have all this work become suspect when another scholar pointed out that pigeons peck objects anyway, regardless of reward. Mainly, it seems, the birds learned about psychologists, not pecking.)

At any rate, the above finch stories describe the two basic ways of looking into the brain. One may be called direct: look at its anatomy and functioning through things like electron microscopes. The other, according to F. H. C. Crick in *Scientific American*, is the "black box" method of the psychologist. In a special issue devoted to the brain, Dr. Crick says "pure psychology is, by the standards of hard science, rather unsuccessful." This is so because it looks at input into the brain and then output from the brain and tries to guess what's in the brain that turns input into output.

If you want to know what neurobiologists know now about that engine of civilization, the human brain—and you should want to know—go out and find the September 1979 issue of *Scientific American* (Vol. 241, No. 3).

It's worth slogging through the long and semitechnical articles in this remarkable issue of the venerable science maga-

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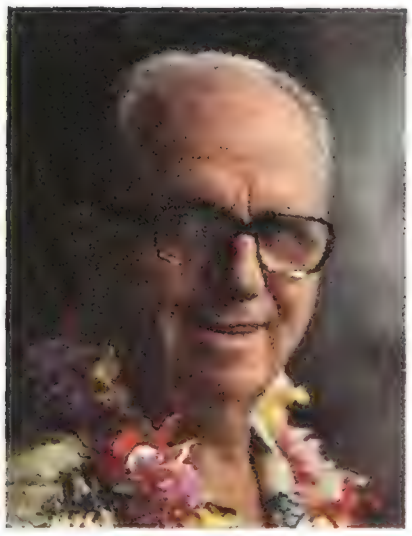

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zine. You will find that there remains plenty to learn. In the words of David H. Hubel, who introduces the subject:

"Applying all the available techniques, to work out in a rough and undetailed fashion the connections in a single structure, say a part of the cerebral cortex or the cerebellum, may take one or two neuroanatomists five or ten years. Accomplished neuroanatomists, a special breed of people, often compulsive and occasionally even semiparanoid, number only a few score in the entire world. Since the brain consists of hundreds of different structures, it is easy to see that an understanding of just the wiring of the brain is many years away."

What we now know is fantastic. What we are yet to learn about the brain is more so. And why not? By what other means would a daughter learn to honor her father by recalling his song?

—JAMES K. PAGE JR.

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Authentic.

FEATHER BONNET
With white hackle (feather). Coloured hackles are used in the British Army to differentiate between regiments.

SILVER COLLAR BADGES
The Dewar's Highlander wears the Saltire of St. Andrew, Patron Saint of Scotland.

SHOULDER PIN
In cold weather, or at night, a clansman in the field would unfasten the shoulder pin so that his plaid became a warm cloak or a blanket.

"WING" EPAULETS
To protect the shoulders from sword cuts.

DRUM MAJOR'S BATON
The Scots have marched into battle to the skirl of the pipes, from Bannockburn (1314) to Aden (1967).

SCARLET DOUBLET
Known the world over as the Scottish and British soldier's colour.

METAL "BREASTPLATE"
Worn where belt and sash cross, and carrying the drumsticks symbolic of the role of the Drum Major.

GOLD SASH
Always worn over the left shoulder.

SPORRAN
Originally a leather wallet, worn suspended from the waistbelt, to carry the day's ration. There are no pockets in the kilt.

SWORD
With basket hilt. Worn at the belt, it is called in the Gaelic the *claidheamh beag*, or small sword, to distinguish it from the *claidheamh mòr*, or broad sword.

KILT
Formerly in one piece with the shoulder plaid, but now worn separately. Highland regiments of the British Army wear the kilt.

PLAID
Means a garment, the main garment of early times, which was kilt and blanket-wrap all in one piece. Tartan is the characteristic cloth of Scotland, woven in stripes.

CADADH
Gaelic name meaning the tartan used for hose.

The Dewar Highlander.

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Workers use small hoes, trowels and brushes to liberate the troops from earthen tomb.

Roof above troops burned after a looting raid, crushing large numbers of the figures.

By Maxwell K. Hearn

An ancient Chinese army rises from underground sentinel duty

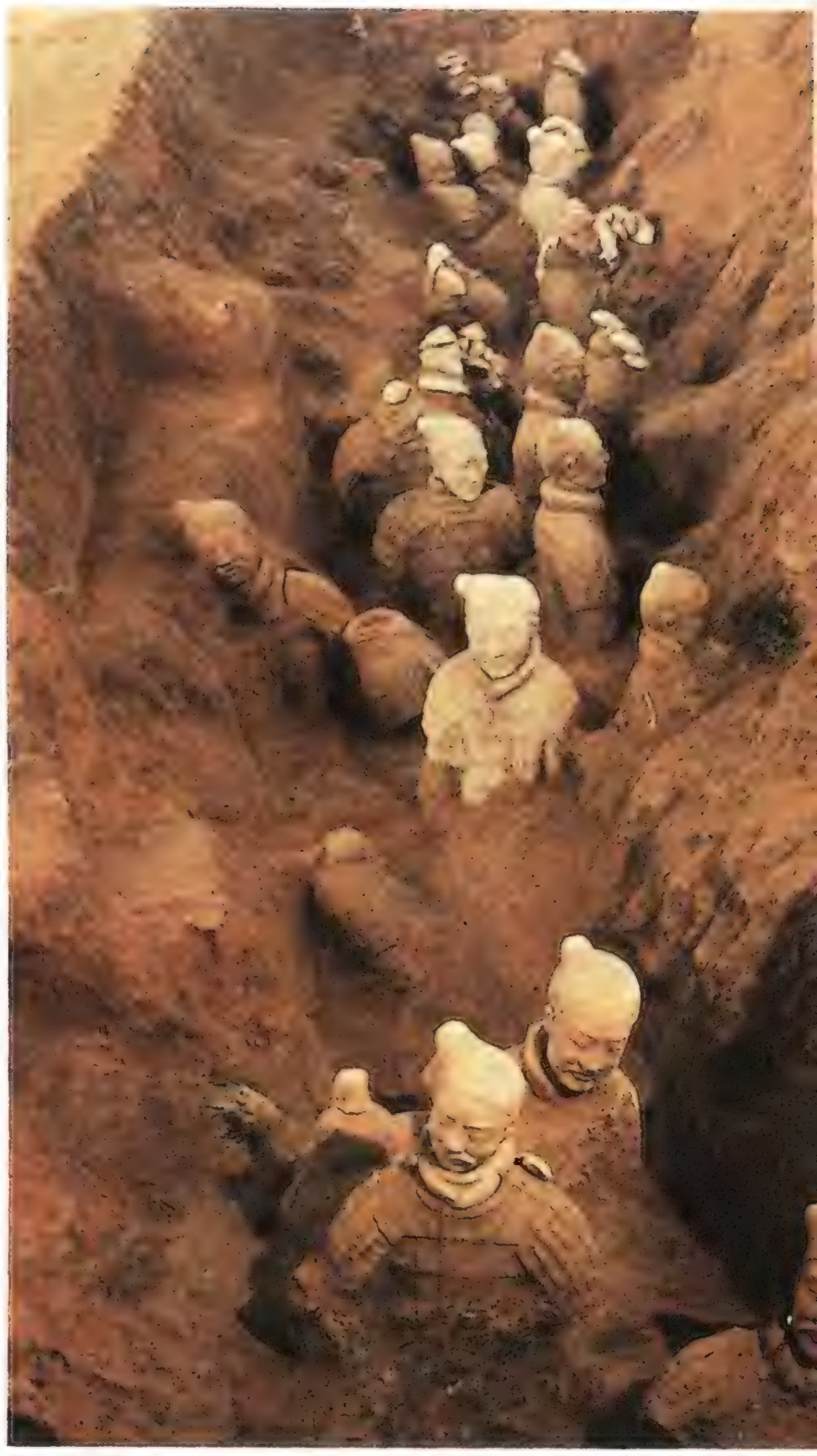
Sculpted in clay, 7,500 of these life-size figures protected the First Emperor's mausoleum. Now they emerge—an archaeological wonder

A Greek myth tells of Jason and his Argonauts facing live warriors which have sprung from dragon's teeth sown in the earth. And now Chinese archaeologists have made it happen. For a chance discovery in 1974 near the ancient capital city of Xi'an (Sian) turns out to be China's most important recent excavation: emerging from the earth is an entire army made of pottery and buried more than 2,000 years ago.

Created as an imperial bodyguard to serve their ruler in his afterlife, some 7,500 life-size soldiers and horses were sculpted in clay, brilliantly painted, with real chariots and bronze weapons. They muster at the huge mausoleum of China's first unifier, the First Emperor of Qin (pronounced "Chin").

During the next two years, eight of these figures will tour the United States as part of a loan exhibit entitled "The Bronze Age of China," and organized by the Metropolitan Museum of Art. The exhibition will open in New York on April 12 and close July 9, then travel to the Field Museum of Natural History, Chicago, August 20-October 29; the Kimbell Art Museum, Fort Worth, December 10-February 18, 1981; the Los Angeles County Museum of Art, April 1-June 10, 1981; Museum of Fine Arts, Boston, July 22-September 30.

China's unification by the ruler of Qin in 221 B.C. had a huge impact which still reverberates in the People's Republic of China. The self-proclaimed First Emperor brought to an end centuries of internecine warfare and political discord. Just as he formed the 1,500-mile Great Wall by connecting the many sepa-



Partly excavated warriors were baked gray, then painted, have turned reddish from soil and fire.

First Emperor is shown in an 1800 French book about China.

rate ramparts previously erected by feudal kings against nomad incursions, he welded a single empire from the several states into which the country had hitherto been divided. He promulgated a uniform code of law and standardized currency, weights and measures—even the written language. Meanwhile, he governed through a nonhereditary, centrally administered bureaucracy. Though the dynasty itself would end within four years of his death in 210 B.C., the fact of unification, thus established, laid the foundation of China's imperial order for the next 2,000 years.

The First Emperor began as King Zheng of Qin upon the death of his father in 246 B.C. He was crowned king when he was only 13 and too young to rule, so the powerful chancellor, Lu Buwei, served as regent until the king came of age eight years later. He soon forced his former regent into exile and launched the first of his military campaigns.

In 16 years he subjugated all of China. Finding himself at 38 the ruler of the entire civilized world as he knew it, he summoned his ministers to devise a new title worthy of his accomplishment.

In the end he created it himself. Combining the words *huang* and *di,* which had previously denoted demigod kings of the legendary past, with the word *shi,* meaning "first," he proclaimed himself Qin Shihuangdi, or First Sovereign Emperor of Qin. His successors were accordingly to be titled Second Emperor, Third Emperor and so on.

To inspect his new realm and awe his subjects with

Assistant Curator in the Department of Far Eastern Art at New York's Metropolitan Museum, Maxwell Hearn specializes in Qin era history.

Conception by Nigel Holmes of how Pit 2 figures were colored when first immured is based on remaining paint flakes. Top row of chariots has drivers in distinctive caps and chariot

warriors with spears. Next row down is armored spear-carrying infantry, with the commander at right. Next two rows portray kneeling archers, bows in hands, hair tied back in chignons. Bottom two rows depict infantrymen without armor, apparently unarmed-combat experts, though the remains of bows found near them suggest they may also have been archers.

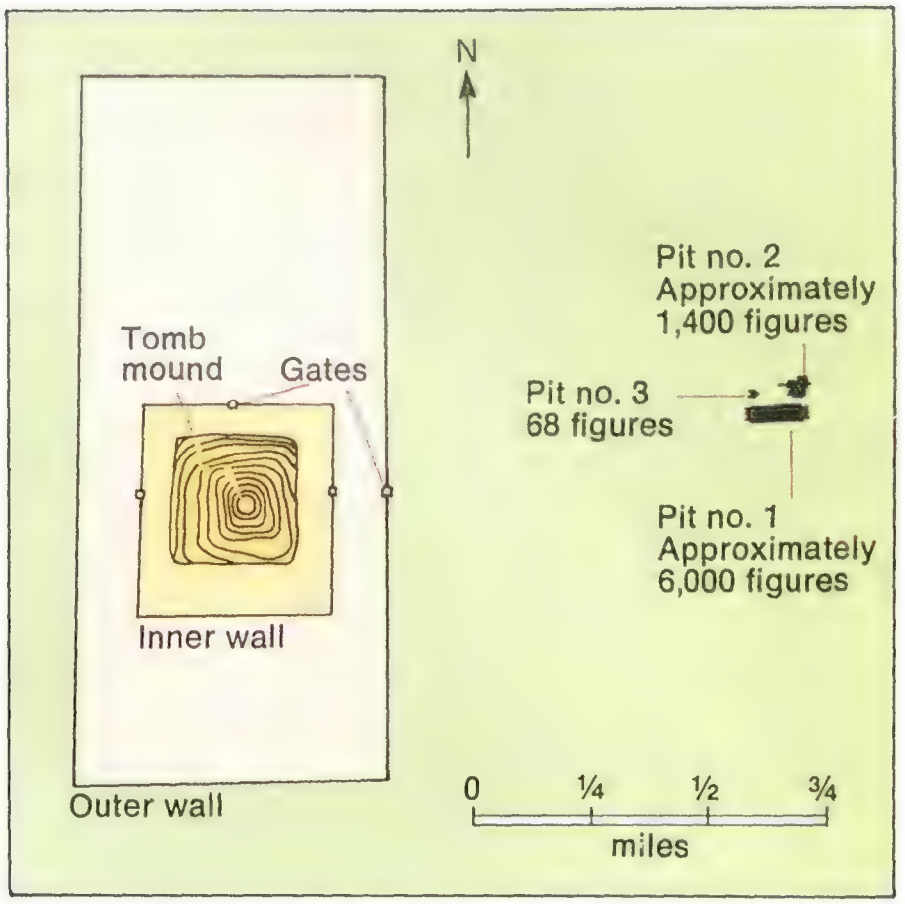
Emperor's tomb mound is seen silhouetted against Mt. Li, which guarded it on the south. Tomb has not yet been excavated.

the grandeur of his reign, the First Emperor initiated a series of imperial tours. During each of these, he visited various sacred mountains where he had stone stelae erected to enumerate the virtues of his rule and articulate his vision of a universal empire. These proclamations indicate that the Emperor held almost divine powers. Sima Qian, China's Herodotus, wrote that the Qin ruler sometimes actually attempted to exercise such powers even over the nonhuman world. Once when he was thwarted by a storm in his efforts to visit Mount Xiang, he took revenge on the mountain by having 3,000 convicts cut down all of its trees. He then ordered that the bare mountain be painted red—the color worn by condemned criminals.

The Emperor's rages against nature reflect an anomaly in his character. Fearing nothing in life, he was developing a growing fear of death. He listened to occultists (one, named Lu, spurred him to complete the Great Wall). He dispatched a party to look for the isles of the immortals and the elixir of life. Then, in 212 B.C., Lu reported to him: "Our search for magic fungus, rare herbs and immortals has come to nothing. It is my sincere opinion that you would be well-advised to change your quarters secretly from time to time, in order to avoid evil spirits; for in their absence some pure being (*jen ren*) will come. For subjects to know their sovereign's whereabouts detracts from his divinity." The Emperor gave orders for all of his palaces and pavilions to be connected by causeways and enclosed thoroughfares so that he might pass unnoticed from one place to another. Disclosure of his whereabouts became punishable by death.

Realizing that the Emperor would stop at nothing in his quest for immortality, Lu fled. The Emperor came to suspect that other learned or clever men might similarly attempt to gull him, and so he ordered all scholars of the capital put to trial. Incriminating one another to save themselves, more than 460 were eventually found guilty and buried alive.

Absorbed with his own self-aggrandizement, the Emperor grew callous toward the welfare of the state. Each year he committed a greater portion of the nation's resources to such vast undertakings as the Great Wall, residential palace complexes and his own mausoleum. The very year the country was unified work was begun on a vast building program (described by Sima Qian): ". . . the entire area from Yongmen to the Jing and Wei Rivers in the east was given over to palaces



Funerary city, its inner part shown above in yellow, surrounded tomb mound. Buried army, about a mile away, guarded eastern approach, outer-wall gate.

Overall view of Pit No. 1, before it was covered, shows fragments of figures shattered when roof was burned. Two workers are studying marks left by charred beams.

and pavilions. Connected by elevated avenues and encircling corridors, they were filled with the beautiful women and musical instruments captured from the different states."

Two years before his death, the Emperor ordered the construction of an immense new imperial residence, and several hundred thousand laborers were conscripted to work on it. It was still incomplete when he died in 210 B.C.

Only the elevated foundation of the main hall of that vast palace survives. But from the layout of the Emperor's mausoleum we can sense his vision of an everlasting world order. As noted by Sima Qian, the Emperor's tomb chamber reproduced in minute detail the universe over which he expected to rule:

"The laborers dug through three subterranean streams which they sealed off with bronze in order to make the burial chamber. . . . Artisans were ordered to install mechanically triggered crossbows set to shoot any intruder. With quicksilver the various waterways of the empire, the Yangtze and Yellow Rivers, and even the great ocean itself were created and made to flow and circulate mechanically. The heavenly constellations were depicted above and the geography of the earth was laid out below. Lamps were fueled with whale oil so that they might burn forever without being extinguished. . . . Finally, trees and grass were planted [on the tumulus] to make it appear like a mountain" (opposite). This description has not yet been confirmed by modern excavations, but it is strongly supported by the tomb site's outward configuration, which served as a replica of a palace city and as a diagram of the cosmos (above).

At the center of the mausoleum is the tomb mound itself. Landscaped into a four-sided pyramid of three concentric tiers, it represents both the apex of worldly power and the zenith of Heaven. With an outer wall nearly four miles long, the mausoleum's vast outer compound encloses an area equal to that of a contemporary city, while the inner sanctuary, located in the compound's southern half, recalls by its placement and size the Emperor's palace. Remains of roof tiles and brick pavements, discovered in the northern half of the outer precinct, suggest that the mausoleum contained a funerary temple and a population to provide for and administer the yearly round of sacrifices.

To connect himself with the worship of the Qin royal ancestors, the Emperor ordered a highway built

Chinese archaeologist's drawing looks straight down into Pit 2 trench, showing crushed figures; 1, four headless horses; 2, charred parts of wooden chariot (no whole chariot has yet been found); 3, charioteer, minus head and hand; 4, infantry. All pieces are here, so excavation workers face a life-size jigsaw puzzle.

between his mausoleum and the Qin ancestral temple some 30 miles to the west. Further to maintain harmony with the cosmic order, the entire complex was aligned along a north-south axis formed by Mount Li to the south and the former capital city of Yueyang to the north. Thus united with his forebears to the west, and anchored between Yueyang and Mount Li, the Emperor was vulnerable only on the eastern side, toward Qin's former enemies. It was there that the bodyguard, sculpted in clay, stood poised for battle.

Evidence that the area around the Emperor's tumulus might conceal an entire population of pottery figures appeared sporadically between 1932 and 1970, during which time five kneeling figures of servants were unearthed inside or near the outer wall of the mausoleum complex. One of these came to the United States in 1974-5 as part of the first exhibition of archaeological finds from the People's Republic of China to visit this country (SMITHSONIAN, February 1975).

In 1974, farmers digging wells near the mausoleum uncovered part of a vast subterranean vault, its collapsed interior strewn with a host of clay warriors and horses (pp. 42-43). This vault is designated Pit No. 1. Subsequent excavations reveal that Pit 1 stretches 686 feet from east to west and 197 feet from north to south and may hold some 6,000 pottery figures. Though called a "pit," it is actually a series of 11 parallel trenches or corridors, each about ten feet wide and almost 700 feet long, with broad galleries running north and south across the entire width of either end.

The floor, paved in brick, is 14½ feet below Qin soil level. Access is provided by rammed-earth ramps

Now roofed over, Pit 1 is the size of two football fields. Signs indicate plot numbers.

Exterior of Pit 1 shows vast protective roof allowing dig to serve as a unique *in situ* museum.

Workers, keeping clean with aprons and sleeve guards, winch a restored warrior back into Pit 1. He'll get his head when he's in place. The stoneware men weigh 200 to 300 pounds; horses at least 500 pounds.

at the east and west ends. Each trench was originally enclosed by a tightly laid roof of thick planks supported by massive wooden pillars and crossbeams, as well as by the earthen walls bordering the trenches. The planks were blanketed by woven mats plastered with clay; the entire network of corridors was then covered with earth.

Judging from the amount of soil which filled in these trenches when the ceilings collapsed, excavators have estimated that in Qin times the mound on top was probably about seven feet high. It is hardly surprising that, topped by such a landmark, the pit was looted of most of the weapons and burned—probably at the fall of the dynasty in 206 B.C. Eventually the pit was filled in and forgotten, preserving the figures.

Since its discovery in 1974, the excavation of the pottery Qin army has taken on national significance. Pit 1, now totally enclosed under a vast hangarlike structure (opposite), has been transformed into an on-site museum which, when finished, will be a spectacular attraction for tourists within China and from abroad.

The enormous effort being made to restore and preserve the Emperor's clay bodyguard suggests the high priority which the government has placed on it. Condemned by two millennia of scholars as a tyrant, the First Emperor has been reappraised in recent years as a progressive ruler who, by his elimination of feudal domains, brought an end to feudalism. Likewise, he has been hailed for his unification of China.

As the Chinese have always valued history as a mirror in which to view the present, the recent prominence of this reinterpretation is a particularly potent

expression of the current political outlook. The commitment eventually to excavate all of the terra-cotta figures may similarly have a deeper significance than mere archaeological curiosity. By the sheer magnitude of their numbers, these pottery legions stand as a monument to the masses who, in the eyes of Mao Zedong, are the real creators of history.

Hardly less prodigious than its creation is the excavation of this army. Work has been carried out in well-planned stages, largely by local personnel. Farmers, whose work at the site halts during planting and harvesting seasons, and archaeology students from Chinese universities have been supervised by a team of trained archaeologists. Following the enclosure of the site, the ground above the pit was divided into a grid of 27 square plots (on p. 44) separated by wide margins. As the layer of soil covering the pit is from four to ten feet thick, much of it is carefully removed by miniature dump trucks.

Next, shovels and other hand tools are used to clear each trench down to the level of the partition walls separating the pit's 11 corridors. Still visible on top of these earthen bulwarks are the imprints of the massive planks that once roofed over the corridors (pp. 42-43). After the corridors and their dividing walls have been determined, work begins on clearing the figures themselves. Although many are toppled or broken, often whole rows have remained upright, their heads and torsos emerging from the earth (p. 39) as in the legend of Jason. With short hoes, trowels and finally brushes, the remaining soil is gently removed (p. 38).

Buried where they fell, even broken figures have proved reasonably easy to repair. The pieces for each figure are collected and placed in a box which is taken to an adjacent storage area to wait restoration. Finally, each figure is lowered back into place (p. 45) and set in its original upright position (opposite).

From the locations of the various figure types and few remaining weapons, it is evident that the underground complex was designed to accommodate a specific military formation. The wide gallery at the eastern end of the pit contains a vanguard unit of unarmored bowmen and crossbowmen, whose long-range weapons would have been the first to be employed in any military engagement. Behind the vanguard, the formation is subdivided within the 11 long corridors. The outer corridor on either side contains two files of archers; the outer file faces outward, prepared to repulse a surprise attack from the flank, the inner file faces forward to assist in an assault. Between these units stands the heart of the army—36 files of infantrymen divided evenly among the nine remaining corridors. In addition, in these corridors are six chariots and three unarmored infantry squads. Each chariot, pulled by a team of four life-size pottery horses (pp. 48-49), is manned by a charioteer, with a warrior "riding shotgun."

In the three corridors not occupied by a chariot team a squad of 32 unarmored spearmen leads the main body of troops. The rear of the formation is protected by three ranks of armored infantrymen placed at the western end of the pit in the north-south gallery. The last of these faces west as a rear guard. This configuration follows military prescriptions in contemporary texts. It is estimated that it will take three to five years for the complete excavation even of Pit 1.

In Pit 2, quality over quantity

In May 1976, a second subterranean complex with warriors (Pit 2) was discovered about 65 feet north of the eastern end of Pit 1. Its figures represent a smaller complementary force—the majority chariots and cavalrymen—estimated to number slightly more than 1,400 warriors and horses. Construction is similar to Pit 1, but its layout reflects the greater variety of military personnel that it contains (pp. 40-41). A projecting rectangular area holds a vanguard of striding infantrymen encircling a core of kneeling archers. The figure of an officer (cover) once stood at the left rear of this phalanx; he is probably the unit commander.

A smaller pit (Pit 3), located just north of the west end of Pit 1, contains only 68 figures. Judging from its position toward the rear and from its large number of officers, it appears to represent an elite command unit. A fourth pit, empty, suggests that work on the terra-cotta army was abandoned before completion.

Despite the staggering number of figures in this pottery army, warriors and horses were not stamped from molds. Each was built up from coils of coarse gray clay with the hollow torso fully supported by solid, columnar legs. The surface was finished with a

During recent trip to China, Vice President and Mrs. Mondale and their daughter, Eleanor, reviewed infantrymen of the vanguard in Pit 1—now called Museum of Qin Figures. Canvas covers earthen walls.

slip of finer clay. Arms and heads of warriors, and tails and forelocks of horses,were fashioned separately, then attached with clay strips. Ears, whiskers and elements of armor were applied while the clay was soft. The entire assemblage was fired at high temperature, then each figure brightly painted and equipped.

The warriors are arrayed in formation for imperial review. Most stand at attention, their poses governed by the kind of weapons they once held. Others kneel or stride, drive a chariot, lead a horse, or poise themselves for hand-to-hand combat. Ordinary foot soldiers range in height from about five-feet-nine to more than six feet. Charioteers are even taller. The commander towers six-feet-five—perhaps because of rank.

Excavators have described seven basic types of armor and a wide range of specialized accouterments: caps, belt hooks, leggings and shoe styles. The varied colors applied to the uniforms may also indicate the several units into which the army was divided. Enough color has survived to permit archaeologists a tentative reconstruction for an artist to follow (pp. 40-41).

How gaudy yet splendid this spectacle must have been, yet how personal is the individual human quality of the warriors' faces. Anatomical details are surprisingly lifelike. Eyes have been sculpted to give a sense of eyeballs pressing against the overlying flap of the eyelid; ears have the form of the upper cartilage and earlobe. Even hairstyles show distinct manners of braiding and forming topknots.

Basic faces with varying features

Despite this seemingly intentional realism, most faces do in fact conform to idealized types having high, smooth foreheads, crisply molded, angular eyebrows above deep-set eyes, prominent cheekbones and full noses. By varying hairstyles or applying elegant, trimmed mustaches or chin whiskers, this basic facial type seems to be endlessly individualized. There are youthful visages, clean-shaven and full-cheeked; there are sharp-nosed, bearded countenances that suggest Central Asian ancestry. The commander of the vanguard (see cover) wears an elaborate coiffure and whiskers that bespeak the dignity of his rank. His furrowed brow testifies to the cares of leadership.

For all their detail, the Qin terra-cotta figures remain stylized, not naturalistic. Close observation reveals that heads are attached to torsos by an elongated cylindrical neck. In the same fashion, forearms are frequently telescoped inside rolled-up sleeves, making arms appear unnaturally short. Even allowing for the stiff greaves worn by many soldiers, legs are rigid tubes supporting symmetrically arrayed torsos.

The stance of the striding vanguard soldier (on p. 51) represents an attempt to break out of this rigid

Horses, four to a chariot, were originally black or brown, with white hooves and teeth, red nostrils.

Cavalry horse was reassembled with an original bronze bridle and bead-covered reins. Its tail is braided.

Warrior's hand is curved to hold a weapon—possibly a bow.

Officer's hands seem to rest on sword. Small, ornate armor plates show rank.

Archer's armor has large plates; his hands are poised to cradle bow.

Archer's intricate braids were painstakingly detailed in soft clay.

Infantryman wears square-toed sandals with puttees above.

Bent sole of kneeling archer's sandal shows the stippled tread.

frontality. Unlike the vast majority in the terra-cotta army which stand in strictly frontal poses, this figure's animated stance recalls a movement in *taijiquan,* the Chinese martial art of shadowboxing. The warrior presents a minimal target to oncoming adversaries while keeping his arms ready to parry or strike a blow.

Bronze arrowheads found beside these striding figures suggest that they doubled as archers. Unencumbered by heavy suits of armor, such versatile vanguards might be deployed ahead of the main army to observe, harass or decoy enemy troops.

The illusion of a contrapposto pose is more successfully realized in the kneeling bowman from the same vanguard unit (p. 49) where head, torso and legs lie in three distinct planes. Yet the figure's tubular legs fail to give an impression of the flexed muscles required to maintain such a pose.

The Qin terra-cotta figures are the earliest large-scale sculptures yet known in China and, despite their representational inaccuracies, provide material for a new chapter in the study of Chinese sculptural arts. Equally, they are graphic illustrations of contemporary military organization and tactics, giving precise information about battle formations, dress and armor.

By its grandiose conception and thoroughgoing depiction, as well as by the sheer magnitude of its numbers, the Qin pottery army exemplified the First Emperor's vision. Henry Kissinger, writing in *Time* about the latter-day nationalist leader, Mao Zedong, notes that he fought to preserve the kind of revolution he had made from modernization and institutionalization. "And then," notes Kissinger, "that great, demonic, prescient, overwhelming personality disappeared like the great Emperor Qin Shihuangdi . . . with whom he often compared himself while dreading the oblivion which was his fate." As for the First Emperor, though, his bodyguard is bringing him out of oblivion at last, to the immortality he craved.

With head tilted and arms poised as though he is ready to start hand-to-hand combat, unarmored soldier from Pit 2 contrasts with Pit 1 figures (below), all at "eyes front."

Pit 1 troops line up. From left: charioteer wearing chin-tied helmet; armored infantryman, maybe a spear carrier; chariot warrior in knee boots; unarmored foot soldier; armored foot soldier, perhaps bowman.

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By William McCloskey

Bitter fight still rages over the seal killing in Canada

Many groups protest the annual hunt, but on the ice Newfoundlanders feel they are just earning their rightful living

This past March, boots and thermals packed, I went to Newfoundland, having received permission from a sealing skipper to ride on his ship. After waiting out a three-day blizzard in St. Anthony, I flew on to the sealing fleet off the Labrador coast. It was below freezing and the wind whined at 20 knots. My helicopter landed on solid ice beside the wooden-hulled *Gulf Star,* and the pilot waited only long enough for me to pull out my knapsack and sleeping bag before heading back toward land, 60 miles away, to beat a new storm moving in.

There I stood alone on ice atop 90 fathoms of water. A dozen men in blood-smeared oilskins were dragging tows of floppy crimson pelts that left a blood trail on the crags and nubbles of ice behind them. When I nodded, one or two responded in a cautious, grunting fashion. We might each have thought we were viewing the Devil.

I started toward the ship, walking granny-style to keep from slipping. Suddenly, from the deck above: "Get away! Don't you come aboard here!" The angry man who shouted had a rough, square-carved face and meant business.

"I had an invitation from Captain Frank Puddister . . ." I began weakly, hoping he was not Puddister.

The captain appeared and all was made right. He had neglected to tell anybody that "some writer fella" might come aboard. Grinning men reached down hands caked with grease and blood to lift my luggage and to help me up the ladder of slippery beams. Don

Text continued on page 56

Protester from Fund for Animals sprays dye on a seal pup to render its pelt useless to sealers.

In background is Fund's ship, *Sea Shepherd*. Soon after picture was taken, Canadians arrested sprayers.

An acrimonious dispute with few undisputed facts

In July of this year, SMITHSONIAN reported on the Western Atlantic harp seal and its splendid adaptation to a harsh environment. But the seal's rich coat is coveted by furriers, and each year on the ice off Canada thousands of seals are killed by clubbing. The liquid-eyed pups—which account for the majority of the animals killed—have become symbols in an increasingly acrimonious dispute involving the Canadian government, the inhabitants of Newfoundland and those who want the hunt stopped.

By now the hunt has become a media event, attracting celebrity protesters. Members of the antisealing group Greenpeace have gone to the ice to chain themselves to sealing ships, while prosealers have burlesqued them (p. 63). Last spring Cleveland Amory and others from his Fund for Animals, in what Amory called a "symbolic spectacular," spray-dyed seal pups (left) to destroy their commercial value. The Fund has also tried to organize a tourist boycott of Canada. In 1977 the U.S. Congress censured Canada for conducting the hunt, although the United States sponsors a hunt by Aleutian islanders in which some 30,000 northern fur seals are killed annually by similar methods.

The Canadian government's response has been to regulate the hunt more closely, but also to close ranks with the sealers. Canadian authorities have sent a public-relations team on an international tour and confiscated photographers' film.

The issue is so beclouded by emotion that few facts are undisputed. Some Newfoundlanders claim the seals compete with them for available fish, but biologists do not have data on this. Harp seals are not endangered animals—there are some 1.4 million adults—and certain Canadian biologists believe that the annual kill quota—180,000 in 1979—will not seriously deplete the herd, although other biologists disagree. The pelts—the most economically significant seal product—are turned into items that range from women's sealskin jackets to frivolous *toy* seal pups. But if seals are to be killed, the prescribed method of clubbing and bleeding is acknowledged by such organizations as the American Veterinary Medical Association to inflict less physical pain and emotional distress than other methods tried—including electric shock and shooting.

Few outsiders have firsthand knowledge of how the seal hunt is conducted. To research this article, William McCloskey worked side-by-side with the sealers, and his report provides an intimate view of what happens out on the ice.—THE EDITORS

Linfield, the mate who had done the shouting, apologized. In the break between storms, this was the day when the seal-hunt demonstrators and the press were all descending on the ice, and Don had thought I was a "Greenpeacer" come to harass them.

The Greenpeace Foundation is notable for its daring acts—its members have on occasion set out in small inflatable boats to interpose themselves between whales and the harpoon guns of whalers (SMITHSONIAN, August 1976)—and is one of the key organizations opposing the hunt. The others include the International Fund for Animal Welfare, led with conviction and a flair for attention by the Welsh-born Brian Davies, and the Fund for Animals, led by author Cleveland Amory.

Between these groups and the Canadian government there is no middle ground. Both sides have locked themselves emotionally to their positions while marshaling a barrage of facts and justifications to support their opposing points of view. There appears to be no solution at this time—the protest groups say "stop killing seals"; the Canadian government and the sealers say "get off our backs."

The Canadians have certainly been placed under pressure. Aside from demonstrations outside embassies throughout the world, individual government officials have received thousands of letters, many by the packet from entire classrooms. Typical of these is one from a child in Louisiana: "The hunters are like vampire bats, always bloodthirsty." Individual Newfoundlanders have been shaken to receive letters such as this from a man in Miami: "You dirty rotten son of a bitch . . . I hope you die!" And from a woman in Santa Cruz: "I pray that the death you harbor in your heart sinks into your groin to render you impotent."

The Newfoundland fishermen who do the sealing live in the island's rockbound outports and have no living except from the water. They regard seals as a legitimate sea product—like cod and mackerel—and they resent, in degrees ranging from mild to fierce, the interference of outsiders "who've got nothin' to lose, boy [according to a young sealer on the ship], but gettin' rich from the publicity." Said a second sealer, in his broguelike Newfie accent: "They'd not be on to hurting we, them Greenpeacers, if whitecoats was ugly little fellers. Oh no, wonnerful little money in ugly." (Brian Davies is well paid by his organization; some Greenpeacers are unpaid volunteers.)

Harp seals are ice-loving mammals, named for the harplike pattern on the adults' backs. At spring whelping time they converge on the ice packs that flow from the north around Newfoundland. The pups' coats are white for about 18 days. The commercial virtues of "whitecoats" include their soft white fur (for which the major Norwegian market now pays a higher price than for other seal furs because it can be dyed, thus disguising garments made from it for purchasers who would boycott seals); the heavy layer of renderable fat under their pelts, which accumulates almost explosively as they nurse from fat-rich milk; and their meat (especially flippers), which is higher in protein than beef and which, like that of lamb and veal, is more tender in the young.

More to the point, whitecoats are helpless on the

Pictures like this one of clubbing began appearing in the 1960s, generating movement to stop the hunt.

ice before learning to swim, while older pups and adults can escape into the water. The truth is that only the young whitecoats can be taken in the quantities that pay to send ships to the ice.

The hunt is directly connected to the cultural roots of the outports. I understood this first when, waiting out the storms back in St. Anthony, I braved winds that iced my beard as I stood on the main road and stuck out my thumb. I hitchhiked to three outports, getting rides from fishermen. With typical Newfie hospitality (only one asked first if I was a Greenpeacer) they invited me home for tea, local concoctions like bakeapple berry jam, even home-canned seal meat. (Seal has a strong and gamy—not fishy—flavor that sits right in this bitter climate.) I entered small, weathered, clean houses (boots are always left by the door) and met people from several generations, all of whom beyond the age of about 15 had fishing and sealing experiences to relate. One man took me down to his stage (gear shack) to show two adult harp seals he had killed and brought in the day before. His wife would preserve the meat and he would sell the pelts and fat. Another man showed me his nets and an old sealing gaff, while his small son followed to finger them wistfully.

The continuity of outport generations emerged frequently aboard the sealing ship, where all the men came from places like Brig Bay, Fogo, Seldom Come By, Joe Batts Arm and Ochre Pit Cove. Winston Fowlow, for example, a reed-voiced young man of 19 who fished for a living from a boat of his own, had trudged from sealing ship to sealing ship for three springs before persuading a skipper to hire him. All the generations of Fowlows he had known and heard of had gone out, and he was thrilled to be following them. He worked hard enough to earn the approval of older men who had sealed for ten and 12 springs. In the evening he and others spoke familiarly and sang ballads of sealing incidents—mostly famous disasters—going back to the 1800s.

Life aboard the 143-foot *Gulf Star* was not fancy, although it had improved beyond recognition from the days of the men's fathers when sealers "slept with the fat," that is, bunked in the same holds where they stored the greasy, increasingly rancid pelts. The *Gulf Star* crew lived in small cabins holding four or six. Some of the cabins, located by the hot engine room, had neither portholes nor good ventilation. The sweetish odor of seal fat, which ripened day by day, permeated clothes, bulkheads, everything. The food, piled high on plates by Harry the Cook, was heavy Newfie chow of the kind that outport fishermen understood: salt cod, or salt pork with plenty of fat, served with

From the very beginning the photographs showed gore aplenty; here, a "panning" operation, in which pelts have been brought to a central location on the ice. Later, they are dragged to the sealers' ship.

At the "Front," about 60 miles off southeastern tip of Labrador, three sealers march off across the ice

heaps of boiled turnips and potatoes, covered with pork-rind gravy. A treat was boiled dough that we slathered with molasses. "Got enough, skipper boy?" Harry would ask. "Take more."

The single spare bunk to be found for me was with Harry and his assistant George, who both rose at 3:30 A.M. or earlier to start breakfast. By daybreak, the men had eaten, donned layers of clothing against the cold, strapped on knives plus steels to sharpen them, and slung rope coils over their shoulders.

They assembled in the cold wind on a deck permanently covered with slush and blood, joking quietly and smoking as they leaned on the staffs of their hakapiks (developed by Norwegian hunters, a hakapik is a cross between a club and an ice ax). At a word from the captain or mate they climbed over the side and fanned out across the ice in pairs or groups, looking for seals.

Beyond the ship, ice stretched in all directions to the horizon, broken only by the silhouette of another ship or the tower of an iceberg. Each day the ice had a different surface, from flat to mountainous with "clumpers." Its consistency ranged from a solidity that required dynamiting when the ship needed to move, to "slob" ice that would bear no weight, to "pans"—ice islands of varying sizes which bunched and separated with the wind and which sometimes rose in a swell like roller-coaster cars.

Walking or "copying" on the ice (p. 61) is an animal skill that requires balance and agility. There were days when frozen snow provided a grainy traction, and other days when all surfaces were, in the words of one sealer, "slick as a green bottle." I soon followed the example of my shipmates and, with the help of the now-solicitous mate, drove nails into the heels of my boots—this after a hundred-pound tow of pelts halted and then anchored me to smooth ice so that my legs skittered as helplessly as those of an upturned bug. As wind moves the pans, channels of water close and open between them. A moment of hesitation and a gap grows too wide to jump. Often, to move from one large pan to another, we used small pans as stepping stones in a light-footed dance, resting full weight nowhere as each chunk sank beneath our boots. On days when wind rammed the ice together into high clumpers, we climbed as much as walked. It was exhausting. And this, of course, was in addition to the work itself—hard by any standard.

There is no way around the ugliness of killing baby seals or, for that matter, of killing any creature. It was

William McCloskey has worked as a commercial fisherman in Alaska and New England. His recent novel, Highliners, *is about Alaska's fishermen.*

carrying flags to mark piles of pelts. In background is one of nine ships that worked the Front in 1979.

done as work, impersonally. The sealer strikes the seal on the head with the steel knob of his hakapik (the other legal method is with a hardwood club). Biologists agree that it takes only moderate strength and aim over a small area for this single blow to render the seal permanently unconscious. The sealer is instructed to strike three times. ("Once to kill him, once for the fishery officer, and once for Greenpeace," say the sealers.) Next, he must turn the seal over and bleed it, cutting straight into the chest. A stream of blood spurts out and reddens the ice. In most cases, he straightens and pauses to sharpen his knife. He then bends over and with deft slices "sculps" the sculp (pelt and fat) from the carcass and cuts the flippers from the fat. Finally he drags the 30-to-70-pound sculp to a central pan marked by a red flag with the ship's name (p. 61), to be picked up later in the day as the ship breaks through the ice to the pans.

There is material here for horror movies. The pans sometimes swim in blood (p. 57), and blood leaves trails over the clean ice where the men have dragged their tows. The skull-smashed seal—dead or permanently unconscious—or even the skinned carcass may twitch with involuntary muscle spasms. While this is no indication of consciousness, it can appear on movie film to be writhing pain.

For perspective on allowable bloodshed within our society, I visited an abattoir when I returned to the States. It, too, was an ugly sight, although at least there was no accumulation of blood because hoses washed it quickly down drains. Here the killing of the cattle was by bleeding, and it was a more drawn-out procedure than the killing of the seals.

I saw exceptions to the orderliness of the seal killing as the men grew numb and tired after hours in the cold. However, I saw no instance in which the seal was left alive before it was skinned—a charge frequently made by the hunt's opponents. The Canadian fishery officer, Wilson Kettle, was a vigorous man who stayed on the ice most of the time. At the start of the trip he made it clear, by demonstrations, that he had standards of killing to enforce and he monitored the sealers from day to day. Naturally, Officer Kettle could be in only one place at a time and without question the men were elaborately careful in his presence. I myself worked hauling fresh-sculped pelts during eight days, going to where I could help most and getting as covered with blood and grease as the rest.

Whether the fishery officer was there or not, the men I saw (who, under the pressure of work, soon took me enough for granted to stop caring whether I watched with an outsider's eyes) still followed the rules set by Canadian law.

Harp seal pups are fat, furry, cute and lovable.

Battle over the harp seal

During a March storm a pile of seal pelts froze solidly to the ice, and now, in minus 20-degrees F.

When they sleep belly up, they look like white sausages —big ones at that, since in their first two to three weeks of life they grow from 15 pounds to as much as 100. The flippers which soon will propel them gracefully through the water do a clumsy job of pushing them across the ice. They cry or squawk constantly, apparently to summon their mothers who leave them for long periods. Since the cries can be heard all night for miles over the ice as the sealers sleep and the ship is darkened, it would appear to be a routine sound rather than one based on fear of the sealers.

Most pups were alone when the sealers found them and in those instances when the mother was present she usually disappeared into the water. Once a mother attacked. I wish I could report that both mother and pup were spared in a burst of sportsmanship, but both were quickly killed without sentiment. (Killing an adult on whelping ice is against Canadian law and can be justified only by a claim that a "belligerent" seal has threatened the sealer.) I saw four or five instances, out of the approximately 400 killings I witnessed, when the mother seal returned to sniff the carcass of what had been her pup. The mother did not stay long, even if the sealers had left. The protest groups interpret the sniffing as grief, while some biologists suggest that the female is merely identifying her young before moving on. It might sound like special pleading to point out how few times the pup is killed in front of its mother (an occurrence which the protest groups declare to be routine) or to note that the female harp seal abandons her pup permanently by the third week so that her maternal attraction is only temporary.

It is true that the Canadian government has bent in the face of protests, despite what has sometimes appeared to be stolid and peevish resistance. (Cleveland Amory reports that when his ship *Sea Shepherd* was struggling through the ice last spring the Canadian Coast Guard refused to relay reports on ice and weather conditions.) Without the international concern aroused 15 years ago by several of the humane and wildlife societies and then orchestrated into indignation by Brian Davies and others, the seal hunt would probably not be as regulated and supervised as it is today. Undoubtedly the old sealers, living aboard ships in near-subhuman conditions, paid more attention to expediency than to conservation or humane killing.

In one move to pacify world opinion, the Canadian government banned the traditional but sinister-looking gaff which was said to be used for gouging the seals. They replaced the gaff, a curved hook with a pointed spike mounted on a pole, with the hakapik, the head of which combines a straight hook with a blunt knob. The Norwegian-designed hakapik is a heavier instrument for hitting the seal squarely on the head, although sealers claim the gaff was just as effective. The hakapik could also be used for gouging—although I never saw it used that way, the blunt side being many times more efficient for delivering a death blow. The difference would appear at least in part to be cosmetic.

Either hook is used to drag objects across the ice and to dig into the ice. Unfortunately for the sealers, the

the sealers struggle to pull them loose. At right is a snowmobile sometimes used to haul pelts to ship.

With the aid of their hakapiks, sealers "copy"—jump from ice pan to ice pan—across open water.

hakapik grips pelts less firmly than the gaff and makes the hard work of dragging them even harder. As for the other use, the difference between the two hooks nearly cost me my life. I leaped a gap between pans, failed to make it, and sank waist-deep in frigid water that filled my boots and began weighing me down farther by the second. No one was close enough to help. I beat my hakapik into the nearest ice, but it kept slipping. The curved gaff would have held, I later found by trying an old one. With luck and adrenalin I thrashed my way to a handhold and struggled back onto the ice, then crept in a trembling shiver to the nearest sealers several hundred yards away. With laughs over how I'd "ga' a grand wettin' " (in the way they joked over their own close shaves), they helped me remove my boots, pants and thermals in the biting wind and wring out the water that was already turning to ice against my skin.

When I complained about how poorly the hakapik point had held the ice, they turned serious. "If they's anything you writes, Bill me son, you write how with no gaff a man's got n'er chance h'at all. You tell people that, now, who's never going to work on de oice and don't understand." The protest groups, of course, want to take away more than the gaff. Brian Davies, whom the Canadian government views as an intolerable pest and whom it has banned from the ice, now lives on Cape Cod as he diversifies, like Amory, to other projects. Davies told me that the seal-hunt protest is the one which can least afford to be lost. "I see it as symbolic. If we can't win this one, given that we're adequately funded and have the public on our side, how in hell are we going to save crocodiles and other less lovely creatures from extinction?" Ed Chavies, a leader of Greenpeace, also regards the seal hunt as symbolic.

"This being a symbol job really tires a fellow out," says Jim Winter, a St. John's radio interviewer for the Canadian Broadcasting Corporation. Winter's beat is the fisheries, and his daily "Fishermen's Broadcast" reaches all the outports of Newfoundland. He expresses the sentiments of most Newfoundlanders from both cities and outports when he declares: "We've honored our obligation to regulate the seal hunt, and now people outside have an obligation to back off."

A number of films have been made of the seal hunt, and the ones I have seen range from balanced to irresponsible. Here is a scene from an old film obtained from a protest group: music throbs ominously as a

Greenpeacers hold a press conference in northern Newfoundland when blizzard postponed hunt.

Aboard the sealing ship *Gulf Star,* crew members celebrate filling their quota at end of the hunt.

nasty-faced man in sealing garb clutches his gaff, smirks and looks down; scene changes to a black-nosed harp pup on the ice; music goes berserk as man beats and beats an object on the ice, while the sound track carries amplified screams and wails. In my experience, I saw no harp pup that needed to be beaten repeatedly to be killed, nor did I hear any emit cries after being struck *once* on the head.

Then there are films that show another sight I never saw: seals being skinned alive while screaming. These are the films which turned viewers hysterical and which draw real indignation from the sealers, one of whom declared to me: "I'd got enough work sculpin' 'um dead widdout a live animal jumpin' under me knife beside." In 1964, the Artek film company of Montreal made a movie which depicted such an incident and stirred international revulsion. Long after the film had made its impact, the man who skinned the live seal signed an affidavit stating he had been paid to do it for the camera.

It is easy for me to accept that some men left unchecked in such a desolate place as the Newfoundland ice have, over the years, committed cruelties as charged by the protest groups. But, for my part, I can only report again that during my days on the ice as witness to several hundred killings under the present controlled circumstances of the hunt, I saw nothing that would not pass in a conventional abattoir—in fact the killing of the harp seals was quicker and less stressful.

Regarding depletion of stocks, I am, like everyone else, at the mercy of figures in print—many of which reach different conclusions. However, during the 1979 hunt my ship was the last to fill its quota (excluding the unfortunate *Prince Andrew* which became trapped in ice and never made it to the seals). As we copied back to the ship from pan to pan to pan for half a mile, we passed scores of live pups. (The tired and bloody-handed sealers stopped to pet them and to offer fingers whimsically for little teeth that were just beginning to show.) As the ship broke through the ice during the next two days we passed several patches of seals, and from the lookout bucket atop the mast I counted, by the dozen, the whitecoats turning to "raggedy jackets" —molting pups that had survived the annual hunt.

From 7,000 seals taken, our 14,000 flippers—each a two- or three-pound hock of meat—were all stored in bins naturally refrigerated by the cold. When we arrived back in St. John's at 11 P.M. on a Sunday, people were waiting to buy them. All next day the sealers worked on deck selling flippers for $17 a dozen. (Traditionally, the crew divides the flipper money without first having a large share removed for ship, owner and captain, as is the case with the "fat" money.) By nightfall most of our supply was gone.

The ship then traveled to a plant 50 miles away where the sculps were unloaded and the fat separated from the pelt. The pelts went to Norway for processing and sale. The fat remained at the Newfoundland plant to be rendered into a quality oil used for lubricants, soaps, margarine and lotions. A sealer's share aboard various Canadian ships of the 1979 hunt ranged from $1,600 to $4,000 for the combined sale of pelts, fat and meat.

This sum represented, for three- to five-weeks' work, a fifth to a third of each man's annual income.

Decked out in top hat and tails, "Codpeace" member mocks Greenpeace by posing with painted seal pup.

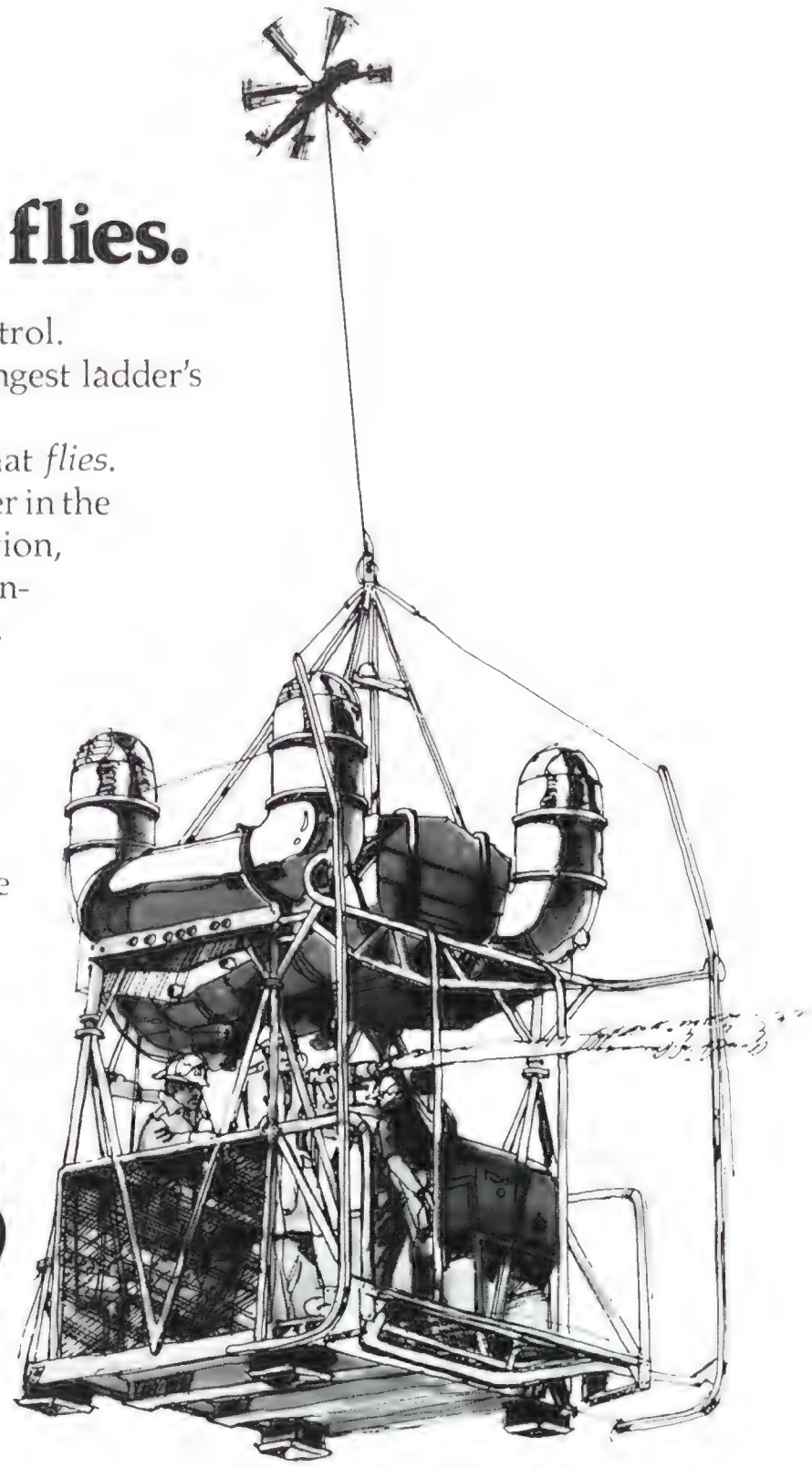
A fire engine that flies.

Thirty stories up, a fire rages out of control. Dozens are trapped beyond even the longest ladder's reach. But not beyond hope.

Because now there's a fire engine that *flies*. Suspended from a helicopter, this lifesaver in the sky can move horizontally in any direction, under its own power. It can dock at a window, unload firefighters and equipment, and carry victims to safety.

With this versatile vehicle, emergency teams can make rescues down narrow ravines, along rugged coastlines or in a remote mountain wilderness.

The McDonnell Douglas Flying Fire Engine. An idea in flight that could one day save your life.



Ideas in flight

Satellites that spring into space from NASA's Shuttle.

When NASA's Space Shuttle flies in the 1980s, the hopes and dreams of a better tomorrow will fly with it. Aboard will be our PAM booster rocket carrying a satellite. In low earth orbit, the craft will emerge from the Shuttle, spin like a top for stability, then rocket into high orbit with its satellite payload. Its goal? Exploring space. Opening new avenues of world-wide communications, weather forecasting and navigation. Even helping to locate the earth's untapped natural resources.

A plane that's been flying for 450 years.

Our DC-10s have been in the air a total of 4,000,000 hours—more than 450 years in all.

Big as those figures are, they're no more impressive than the number of passengers who have flown the DC-10. More than 230 million. And every ten days another million come aboard.

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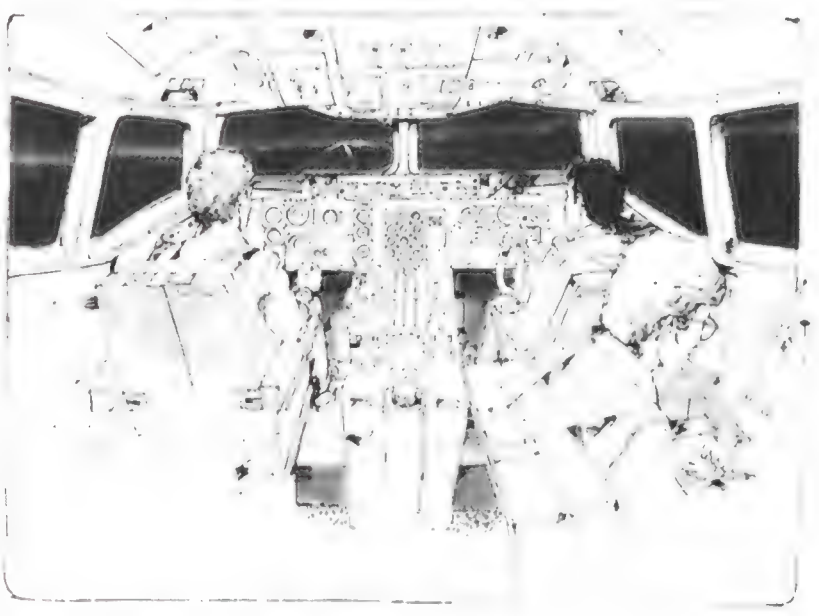

Pilots who "fly" anywhere without leaving the ground.

Time was, you had to fly to LaGuardia to learn how to land there. Not any more.

Now there's VITAL IV, a computerized visual simulation system that creates a precise, full-color, moving image of what pilots really see when landing or taking off. Day or night. Under any weather conditions. At hundreds of airports worldwide.

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To learn more about our ideas in flight, and how they work for you, write for our free booklet, "Surprising But True," McDonnell Douglas, Box 14526, St. Louis, MO 63178.

MCDONNELL DOUGLAS

Our own self-indulgent and shameful American wastrels: the finger of scorn is...

It is a commonplace that many humorists, while making us laugh, have a serious, sometimes bitter message. Our most conspicuous example is Mark Twain. His basically sour view of the human race comes through clearly in his *Letters from the Earth*. His embarrassed family had suppressed this book until 1962.

"When he [Man] is at his very best," wrote the Twain Satan on a reconnaissance trip, "he is a sort of low grade nickle-plated angel; at his worst he is unspeakable, unimaginable; and first and last and all the time he is a sarcasm. Yet he blandly and in all sincerity calls himself the 'noblest work of God'. . . . he has talked it through all the ages, and believed it. Believed it, and found nobody among all his race to laugh at it."

But wait a minute, you old Devil. There has been, among others, Robert Osborn, the cartoonist, who laughs—and scornfully. He became exercised at the wastrel ways of his fellow Americans and the drawings on these pages are the result, with captions adapted from his verbal comments.

To be sure, foreigners also have sometimes taken similar views. For instance, a common appraisal of our pre-D-day military influx into Britain was that the lovable Americans were "overfed, overpaid, oversexed and over here."

Osborn doesn't give his victims of today's world much of a chance to disagree—but, then, neither did Hogarth or Thomas Nast.

Thus, SMITHSONIAN offers Osborn *without* the customary hedge: "Any resemblance to any person, living or dead, is strictly coincidental."

Look now, *you* may be here.

Unaware of the hard realities below,

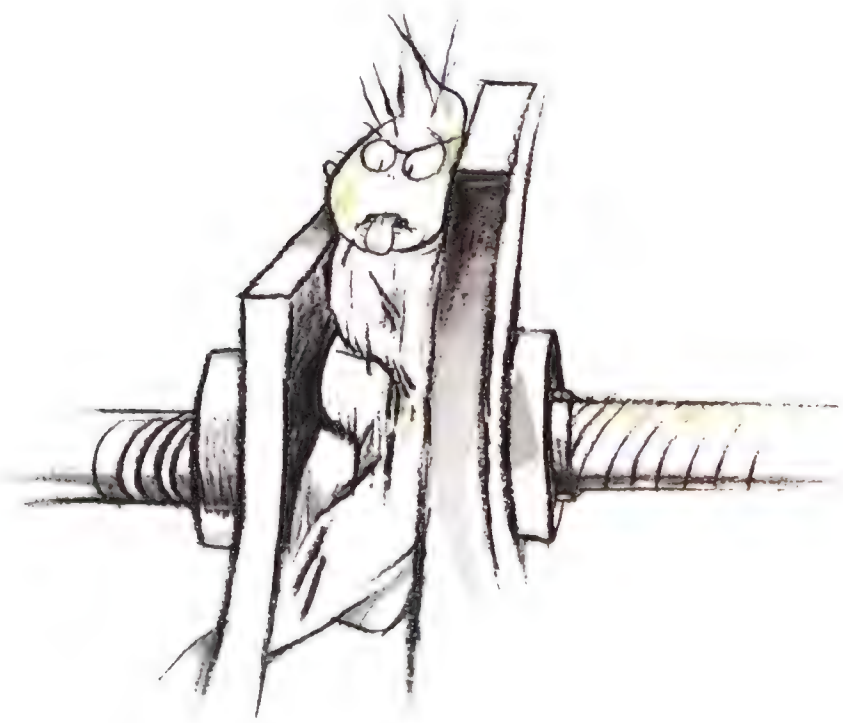
...Osborn's

The cartoonist turns serious to take accusatory aim at the behavior of his fellow citizens in critical times

the self-indulgents continue on Cloud 9

Leaving lights on, whether needed or not

The mower, a fattening, nonexercising way of life



The seldom-felt vise: "They can't do this to me!"

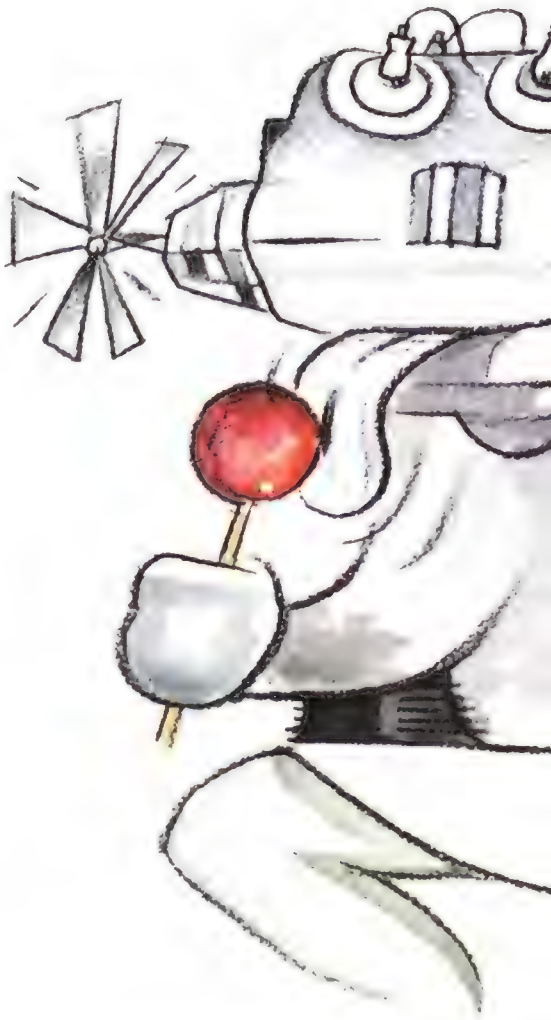
By land, sea and air we keep our toys,

but we may be freezing later on

The adult as an all-American adolescent

"Where am I?"

Electricity: "I've got to have it."



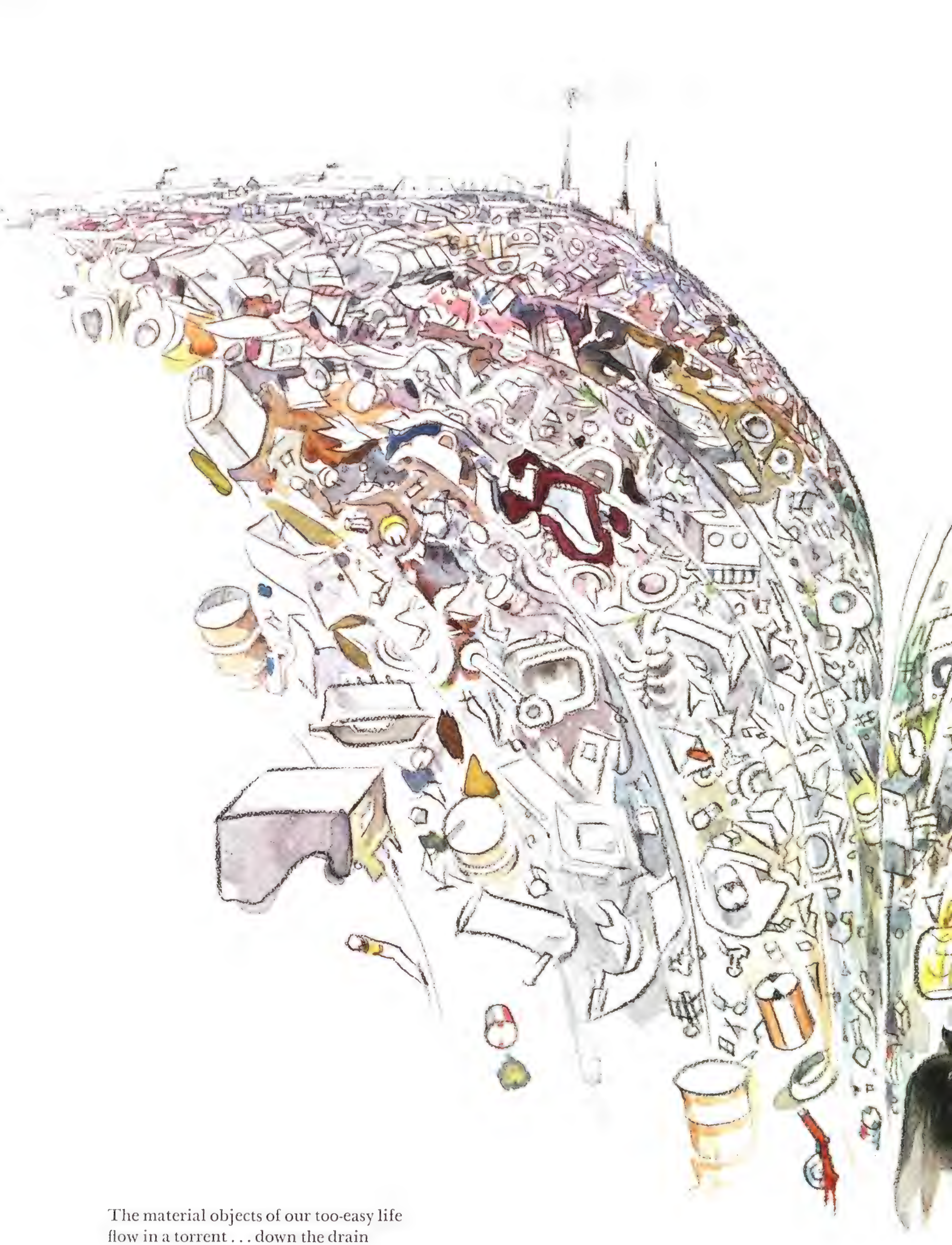
Internal combustion engine,

So, what is consumed is *good* for America

an all-day sucker we crave

The suffocating plethora of paper

Disbelief at the emptying cornucopia



The material objects of our too-easy life
flow in a torrent . . . down the drain

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a human hair? GEE!"

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It's truly a miracle of modern science. A hair-thin fiber, made out of glass, that transmits your voice with light impulses.

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The big benefit being that as telephone traffic gets greater and greater (which it certainly will), these cables will be able to handle it without taking up much space under the ground.

"Fiber Optics" (as it's called) isn't just theory anymore. It's actually serving thousands of our customers in California.

Because we at GTE finally took it out of the labs. And put it under the streets.

GTE

Communications/Electronics/Lighting/Precision Materials

By Maureen Green

A baronial loan of great art for tour of the U.S.

The great Thyssen-Bornemisza collection is one museums would love to own, but are also happy to show at every opportunity

The gallery wing of the Villa Favorita in Lugano, especially built to house the collection in scientifically designed but entirely elegant rooms.

At the Villa Favorita in Lugano, the Swiss home of Baron Hans Heinrich Thyssen-Bornemisza, old friends, often including an art historian or two, may be offered with their coffee and liqueurs after dinner an immense color transparency. "What do you think of it?" asks the Baron as they hold up the picture to the light. "Should I buy?"

Baron Thyssen-Bornemisza is the owner of one of the largest and most extensive private art collections in the world; some 500 Old Masters and about the same number of modern paintings are now in his possession, either in his gallery attached to the Villa Favorita, or distributed among his various residences in England, Monaco, Spain and the United States. A number of his Old Master paintings are of a quality unequaled in any private collection anywhere; others are the last of their kind outside the walls of public museums. And he is still buying.

From the Old Master collection a group of 57 pictures has now been lent by Baron Thyssen to the United States to be exhibited first in Washington at the National Gallery of Art (from November 17 through February 17, 1980), and then at eight other leading museums over a period of two years. The exhibition has been made possible, in part, by a grant from United Technologies Corporation. From 500 masterworks, 57 may seem a mere handful, but it is a handful seldom to be encountered in one show. To be sure, some of the most famous Thyssen pictures have been left behind in Europe, since they should not, for conservation reasons, take a two-year trip; and others are impossible to insure. The Holbein wood panel of Henry VIII is judged too delicate to travel again; the great Caravaggio of St. Catherine has recently been moved to Daylesford, the Baron's newly bought mansion in England, where it will stay for a year. The exquisite Ghirlandaio *Portrait of Giovanna Tornabuoni* (p. 85) is Baron Thyssen's favorite picture, and she is staying at home. Eyeing his favorite, Thyssen explains, "Well, we have to keep something."

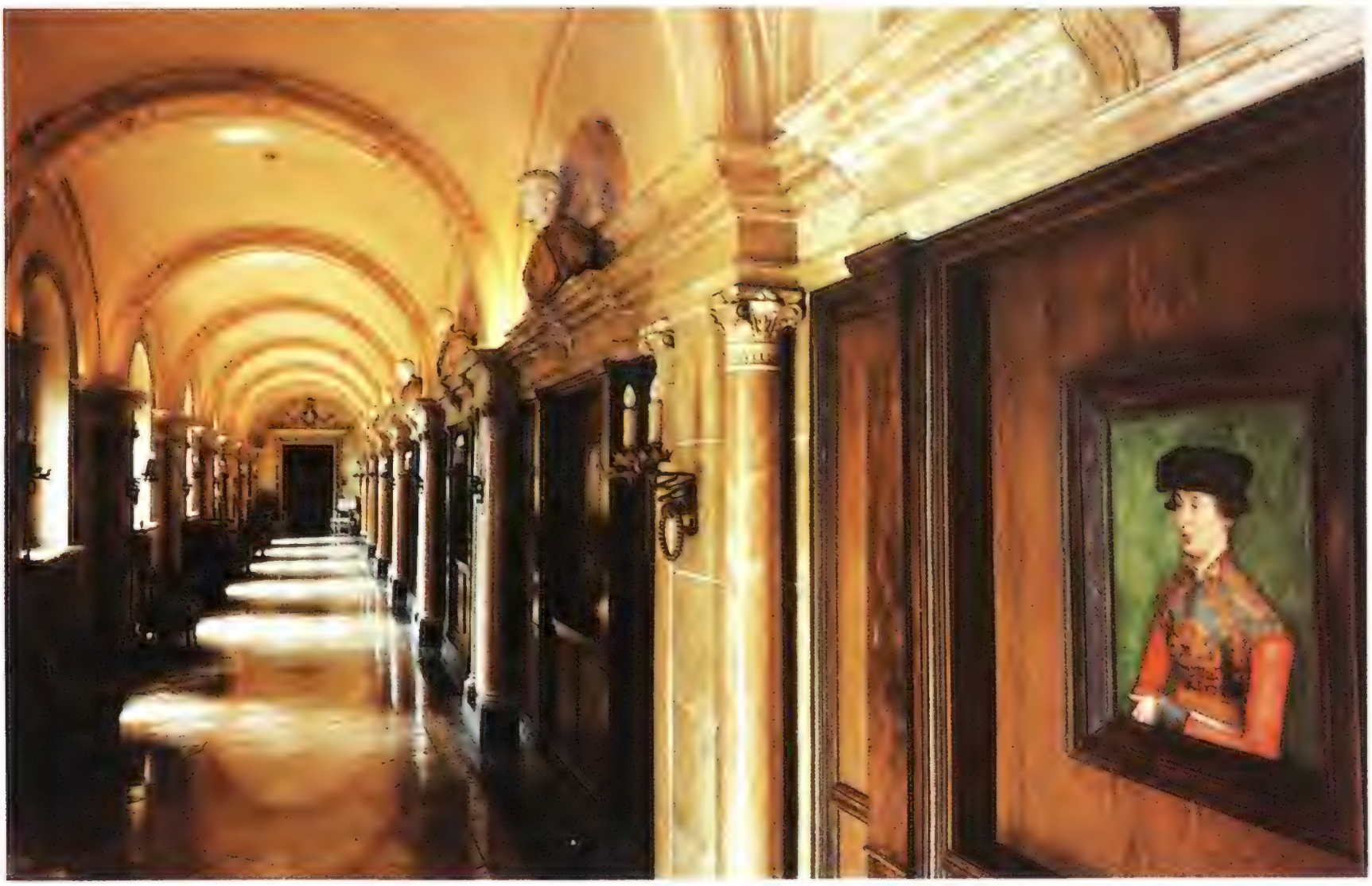
Even so, the exhibition has enough knockout pictures, covering a range of schools and artists, to make catalog clutchers of us all. Among Italian masterworks in the show are the decorative Carpaccio *Young Knight in a Landscape,* also called *Francesco Maria della*

Baron Hans Heinrich Thyssen-Bornemisza is shown at La Favorita, his Swiss villa. Painting is Rubens' *Toilette of Venus,* his interpretation of a famed Titian.

The author writes frequently for SMITHSONIAN, *most recently in October on John Singer Sargent.*

Photographs by Dmitri Kessel

Sculpture of an extraordinary Bavarian angel, 1730, stands on landing of the entrance stairway of the gallery. The painting is Tiepolo's *The Death of Hyacinth,* dated about 1750, after a story from Ovid.



Within the villa itself is a sweeping marble-floored and arched gallery, its alcoves lined with fine paintings. At right is *Portrait of a Young Woman,* c. 1525, by the unidentified "Nürnberg Master."

Rovere, the earliest existing full-length portrait of a single person in the history of Italian painting, bought by Baron Thyssen's father, and the famous Palma Vecchio *Portrait of a Woman, "La Bella"* (p. 81) acquired by the present Baron. Star of the many superb Flemish works is a rare Jan van Eyck, the double-paneled *Annunciation.* German pictures have long been a glory of the Thyssen-Bornemisza collection, and the superb Altdorfer *Portrait of a Woman* is probably the only female portrait he ever painted. Both the van Eyck and the Altdorfer were acquired by the first Baron Thyssen-Bornemisza, but the present Baron has added many French paintings to the collection; two Watteau scenes bought in the last four years are in the exhibit, along with a famous Fragonard. A wild Goya head of a blind man, *El Tío Paquete,* and two Annunciations by El Greco (pp. 84-85), both acquired by the present Baron, enrich the Spanish collection. In a show full of stars, the list of favorites could go on and on. The exhibition ranges from the 14th century to the 19th, from Duccio to Goya.

These pictures usually reside, along with their companions, in the house and picture gallery of the Villa Favorita, on the shores of Lake Lugano, built to house his collection in 1937 by the late Baron Heinrich Thyssen-Bornemisza. Although his son, the present Baron, and his wife inhabit the villa for only two or three months of each year, the gallery there is the center of his art collection, with a curator and art librarian at work full time.

As a collection that has been built up in this century, the Thyssen pictures reflect two generations of contemporary art-historical enthusiasm. The present Baron's grandfather adventurously bought sculpture by Rodin, but it was his son, with the vast Thyssen steel fortune, who began to amass a collection of Old Master paintings, especially Flemish and German.

When the collection was lent to the Neue Pinakothek in Munich in 1930, the international art world was amazed. No one had realized that Baron Thyssen had been collecting on anything like this scale. A few of the pictures, however, came in for criticism, and one dealer, Rudolf J. Heinemann, offered his advice, which was accepted, in steering the Baron away from doubtful canvases in the future.

All during the Depression years, he bought far and wide, watching for the dispersal of hereditary collections. From the Otto Kahn collection in the

Titian's *Portrait of Doge Francesco Venier* recalls Vasari's comment that his color gave his figures "an almost lifelike quality."

United States, Thyssen acquired not only the Carpaccio, but also the important Frans Hals *Family Portrait*. From the Scottish Duchess of Montrose came the exquisite Memling *Portrait of a Young Man*.

Many of these pictures were bought for sums that today seem ridiculously low. Some were even then. An English aristocrat, Earl Spencer, sold off the only surviving oil portrait of King Henry VIII by Holbein to Baron Thyssen in 1934 for about $7,500. The present Baron is as amazed as anyone that this picture ever left Britain. He surmises that "my father bought the Holbein so that Earl Spencer could buy himself a Bugatti."

After the collection was moved to Lugano, masterpieces continued to drop into the first Baron Thyssen's lap. The lovely Ghirlandaio portrait was acquired when many of Pierpont Morgan's pictures were dispersed (although the library remained intact—SMITHSONIAN, September 1979). Some of the greatest bargains came from the Barberini collection in Rome. *Saint Catherine of Alexandria* was thought to be a Caravaggio in 1935 when it was acquired for $16,000; today, no one doubts that it is a Caravaggio, and should it ever appear on the market the bidding would not halt under $4.5 million.

In 1974 the first Baron died and his younger son, who had studied art at his university and spent the war years among his father's pictures in Switzerland, inherited much of the Thyssen fortune, the industrial empire and most of the works of art. One of his first acts was to open the Villa Favorita collection to the public in 1948. Now, during the summer, visitors may walk through the grounds, along a brick path on the shore of Lake Lugano, to reach the works in the picture gallery three days each week.

As Baron Thyssen guided me around the 20 jewel-case rooms of his picture gallery, its marble floors elegant with urns of foliage and flowering plants, the larger rooms containing appropriate items of furniture, the history of the collection since 1947 began to emerge. At my question of whether he had immediately tried to fill in gaps in his father's collection, Thyssen laughed shortly. "Gaps, yes, you could say that." On his father's death, the Thyssen pictures were shared among the next generation, and many masterworks went to his brother and his two sisters. "Just under half of the original collection went," he says. "Bringing the collection back together again is how I started collecting." "The little Petrus Christus *Our Lady of the Barren Tree*," Thyssen recalled, "used to belong to my aunt, and she had promised to leave it to me. But [West German Chancellor] Dr. Konrad Adenauer gave her a decoration and she gave Dr. Adenauer the Petrus Christus. He took it to Switzerland, which I would not have been able to do, and when he decided to sell, I acquired it. He didn't know that he had sold it to *me* until he saw it in the gallery here."

Thyssen's own enthusiasm for painting covers most

Jean-Honoré Fragonard's ancien régime painting, *The Seesaw,* lives appropriately at the villa, surrounded by antiques, in the French Room.

schools among Old Masters, but he is particularly interested in primitive Italian works. All but two of the Italian pictures visiting Washington have been added since his father's day, and he is especially proud of the Duccio bought from Nelson Rockefeller, *Christ and the Woman of Samaria,* the only work by this rare Sienese master in private hands today.

In a world where very rich collectors compete with increasing intensity for rare works, Thyssen has had to make some fast decisions. One morning in New York, the Baron visited a restorer and saw the Giovanni Bellini *Nunc Dimittis,* a work of sumptuous color by a Venetian master not then represented among the Thyssen pictures, and the *Portrait of a Man* by Antonello da Messina, a rare work by a master whose paintings are now confined to museum collections. "I had to make up my mind in ten minutes," Thyssen recounts as he surveys the pictures. "I bought them both."

"My father had five Rembrandts," Thyssen recounts, "but I got only one, a landscape. I have since bought these two: The *Portrait of a Man Before an Archway,* dating from the same period as *The Night Watch,* and the self-portrait here which is the one used on the thousand-guilder banknote." Rubens' *The Toilette of Venus* (p. 76), acquired in 1957, is a transformation achieved by the artist in copying the famous Titian. Since the Titian resides in the National Gallery of Art permanently, Washington visitors to the exhibit will have a chance to compare the subtle process by which a Titian becomes a Rubens.

The passion to collect is, to Thyssen, "that you think

Palma Vecchio's luscious *Portrait of a Woman, "La Bella,"* was at one time in the 19th century believed to be from the hand of Titian.

you have found something special." The competitive instinct is also, obviously, aroused. When Baron Thyssen was showing the late Samuel H. Kress around his picture gallery, Kress stopped in front of Lucas van Valkenborch's snowy version of *Infanticide at Bethlehem,* and exclaimed, "But that is my picture!" Thyssen replied, "No it is my picture." "But I chose it," said Kress. "But *I* chose it," replied Thyssen. "But I paid for it," said Kress. "But *I* paid for it," said Thyssen, "and I took it." An over-excited dealer, obviously confused by the interest of the two famous collectors, had sold them both the same picture.

In many ways Baron Thyssen adds to and embellishes the family collection in a manner very different from that of his father. The first Baron bought discreetly, well out of public view. The present Baron is at home in the auction room, where he tends to rely only on his own opinion. He seeks the advice of everyone—and no one. After long experience of art dealers, "It is best to have no advisers," he says with resignation. "It is such a racket. There is always some kickback. Even the museums may be in competition with me for a work. But I do get independent opinions from some of the Dutch museum directors."

Thyssen's individual mixture of flamboyance and shrewdness has won him reluctant admiration among dealers. Most very rich collectors stick to the magnificent but well-worn pathways of Old Master pictures;

At top: in the gallery, to the right of doorway, is an Ulmer Meister diptych; to the left, Michael Pacher's *The Marriage of St. Catherine.* Bottom: an El Greco carving atop doorway; Bramante's *Ecce Homo* straight ahead; to the left hangs Antonello's small *Portrait of a Man.*

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The one carat diamond shown is enlarged for detail.
Prices may change substantially due to differences in diamond quality and market conditions. De Beers.

Thyssen has explored some interesting byways as well. Unpredictably, he has acquired Dutch pictures such as the Frans Jansz Post *Village With "Casa-Grande" in Brazil,* in the current exhibition, a local scene from the 17th-century artist's years in Brazil.

Baron Thyssen also collects modern pictures with equal zest. In his own blue-carpeted apartment on the top floor, the Baron dines with Utrillos and Rauschenbergs, watches television with Kandinsky and goes to bed to the visual accompaniment of Renoirs and Pissarros. Ancient and modern, his immense collection now covers a wider field than any other in private hands, and Thyssen admits: "I am the opposite of most collectors. I do not specialize." His favorite Ghirlandaio is unlikely, however, ever to be displaced in his affections. When the Baron finds sleep elusive, he is said to let himself into the gallery to gaze at the quiet face of Giovanna Tornabuoni.

Thyssen is always watchful of the physical state of his pictures, stopping on a walk around the gallery to summon Marco Grassi, his picture restorer, who comes to Lugano from New York each summer. The varnish on the Pieter de Hooch *Interior of the Council Chamber of Burgomasters in the Town Hall in Amsterdam, With Visitors* is cracked and dirty, and freshening up is advised before the picture sets off for the United States. "After the last war," Thyssen recalls, "there were no good restorers here in Europe, so I sent 20 or 30 pictures each year to be cleaned and restored in the United States. That went on for ten years." Thyssen is

Two annunciations in the collection by Domenikos Theotocopoulos, known as El Greco, occupy the Spanish room. To their right is another El Greco, *Ecce Homo.* Next are Murillo's *Santa Justa* and his glowing vision of *The Madonna and Saints Appearing to Saint Rose,* which is included in the exhibit.

amazed that collectors are so willing to see their great pictures through a curtain of dirt. The glorious Palma Vecchio, *Portrait of a Woman, "La Bella,"* came to the collection "all brown. Look at the colors now!" Similarly, a superb, recently acquired Madonna and Child by Luini, a pupil of Leonardo, was "extremely dirty. How did they see it?" One of his two Watteau canvases "was thought to be in very poor condition. No one checked. I bought it and it was in very good condition once it was cleaned." Some of the immediate postwar work brought exciting revelations. "I found the Carpaccio signature and date and a lot of fresh detail," says Thyssen, "when that was first cleaned, and overpainting removed."

The pictures Baron Thyssen so persistently acquired and preserves, he disperses again in frequent and generous loans. Sometimes those who were foolish enough to lose a masterpiece to him treat its loan back with more respect. For a recent London exhibition of portraits of the British royal family, Thyssen lent the Holbein of Henry VIII, and dispatched it informally by air under the arm of his curator, Stefano Berkes. Mr. Berkes was amazed to be met at London airport by an armed guard and police motorcycle escort. The modern pictures for which there is little space are more or less continually on loan. Those who can visit the current selection from the Thyssen-Bornemisza collection as it wends its way from Washington, via Detroit, Minneapolis, Cleveland, Los Angeles, Denver, Fort Worth and Kansas City to its final showing at the Metropolitan Museum of Art in New York, should enjoy it as a superb first course. There is more, much more of the banquet to be sampled some summer in Lugano. And it is a feast that is growing more sumptuous all the time.

One painting that will not travel, Ghirlandaio's Renaissance ideal, and the Baron's favorite, is *Giovanna Tornabuoni,* dated 1488, the year she died.

Collection of Baron Thyssen-Bornemisza

By Sam Love

Whatever became of the predicted effortless world?

By now we were supposed to be living amid automated abundance—but these scenes don't seem to be around

Elektro, a Westinghouse world fair star of 40 years ago, smoked and talked, was a dud at dancing.

According to predictions offered five decades ago, life in this glorious year of 1979 should be like this:

Bleep, Bleep resounds from Bill's pillow speakers as he rolls out of bed and hits the "morning activate" button on his bedside computer control panel. Eggs automatically slip from their rack, crack and start cooking on the infrared range downstairs. By the time he's out of the ultrasonic shower, his robot-prepared breakfast is waiting on the counter. No meal pills for Bill—he rejected them for real food.

A quick glance over his house's control panel and he steps into his disposable climate-controlled suit, waiting in a rack by the door. Outside he settles into his "Futuramic" autocopter and glances at the electronic grass clipper mowing the lawn, its electronic-eye scanner sweeping the grass tops to determine which part of the lawn needs cutting.

One look at his radarscope tells Bill the air lanes are already crowded, so he'll drive the 100-mile-an-hour lane to the core-city complex.

Now that the tough choice of flying or driving is out of the way, Bill activates his vehicle's typewriter-size nuclear power plant, good for five million miles before refueling. The reactor heats up; his computer plots his route; his radar engages the steering; and Bill is off by surface to keep a business appointment 50 miles away.

Today it seems hard to believe that anyone could have fantasized such a future, but our sketch is based on actual predictions that have appeared in popular magazines in the past 50 years.

Although there were earlier fantastic predictions in the writings of Jules Verne and others, a real flurry of futuristic fantasies started pouring out in the 1930s, providing both escape from the Depression and hope that life could get better. This interest culminated in the 1939 New York World's Fair, which chose as its theme the World of Tomorrow.

Depression-weary eyes must have really sparkled at the City of Tomorrow in the Fair's theme exhibit, marveled at Firestone's all-electric farm, and practi-

Speed-controlled highway lanes crossing many kinds of terrain were a crowd-pleaser in General Motors' Highways and Horizons Futurama in 1939 New York World's Fair.

cally popped out when they saw General Motors' highway of tomorrow.

Norman Bel Geddes, designer (with aide Worthen Paxton) of the Futurama of General Motors' Highways and Horizons exhibit at the fair, foresaw highways with multiple lanes, each set to a different speed. Cars would enter on low-speed outside lanes; then, as spaces opened up, the car's automatic "beam" would move it to progressively faster inside lanes. It was projected that by 1960 we would have highways with 100-mile speed limits.

In the central theme exhibit inside the Fair's 200-foot Perisphere, designer Henry Dreyfuss constructed another type of city. In his "Democracity," small satellite towns would surround an urban core. Agriculture and community would be integrated in the satellite towns so that residents could eat garden-fresh vegetables, stroll in greenbelts and walk to nearby workplaces. Dreyfuss speculated that in such a setting "the family will develop good taste because they will be surrounded by good things—music, trees, and other cultural advantages."

Dreyfuss' hope that new designs could improve public taste was shared by David Sarnoff, president of RCA. In 1939 Sarnoff predicted that "television drama of high caliber and produced by first-rate artists, will materially raise the level of dramatic taste of the nation, just as aural broadcasting has raised the level of musical appreciation."

The realization of these dreams was rudely set back by World War II. During the war domestic consumption slowed as assembly lines were harnessed to the war machine. But the dreams persisted, and even became bolder as the war introduced new technologies such as plastics, jet engines and nuclear power.

As far back as 1915 Charles P. Steinmetz, one of the early electrical pioneers, wrote in *Ladies' Home Journal* that new generating technologies would make electricity available so cheaply that "it will not pay to install meters." Instead of our meters and monthly electric bills, he expected power to be sold on the basis of a flat tax, as water is in some cities. All this would be possible, he projected, by generating electricity at "big central stations of many million horsepower."

A glorious future—unattained

"Democracity" model, inside the Perisphere, was part of theme exhibit at 1939 fair.

While coal development never provided so much power that it didn't pay to meter it, nuclear fission appeared as early as 1941 to be just such an immense source of energy. In *Popular Mechanics,* for example, Dr. R. M. Langer, engaged in uranium research at the California Institute of Technology, predicted "a power plant the size of a typewriter" containing a pound of uranium.

In even bolder strokes he wrote, "We can look forward to universal comfort, practically free transportation, and unlimited supplies of materials." As for cost, Langer speculated that these miniature reactors would provide cheap power in every home and factory, without distribution lines, and "electricity will cost less than one-tenth of a cent per kilowatt hour." (In contrast, the national average price is now 40 times his projection and in some cities the cost is more than 100 times his rate.)

With such a cheap, convenient source of power, the sky was the limit for fantasies. Langer foresaw giant flying wings using compressed air or steam for takeoff and landing. Once airborne, boiling steel vapor would be propelled out the rear and condense "as fine harmless dust." He never anticipated the requirement of environmental impact statements.

Langer was such an enthusiast of typewriter-size power plants that he encouraged others to experiment with them. He also suggested using the reactors to build a machine to "melt our highways instead of building them as we do now." This trailblazing device would use intense heat to fuse dirt into lava to create a smooth surface for cars.

Langer wasn't alone in his fantasies. A president of the Society of Automotive Engineers predicted atomic auto engines as small as a man's fist. A story carried by Scripps-Howard Newspapers described the "artificial suns" made from chunks of uranium mounted on tall towers. With these we could finally bring under control one of humanity's arch nemeses—the weather. Nature wouldn't stand a chance:

"No baseball game will be called off on account of rain in the Era of Atomic Energy. No airplane will bypass an airport because of fog. No city will experience a winter traffic jam because of heavy snow. Summer resorts will be able to guarantee the weather and artificial suns will make it as easy to grow corn and potatoes indoors as on the farm."

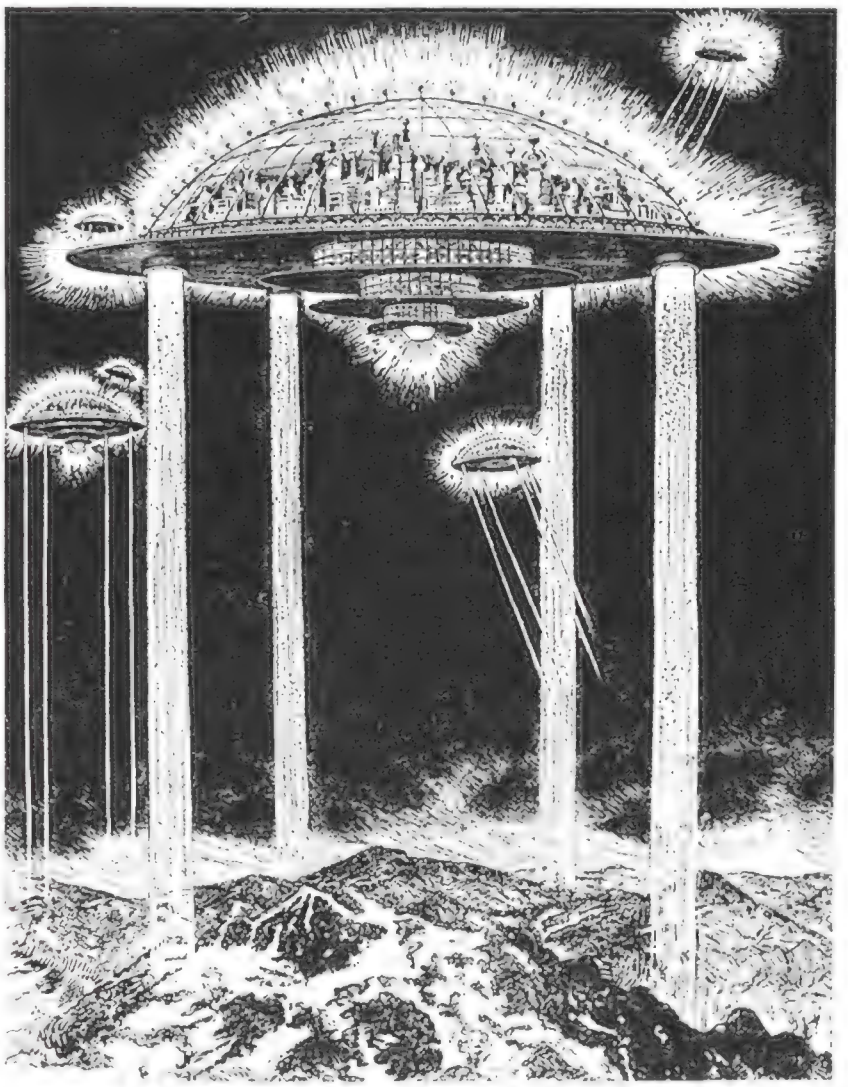
In addition to the fantasies that were stimulated by nuclear energy, many other aspects of the times influenced our ideas about the future. The war gave us giant airplanes and this inspired numerous visions of flying hotels. *Popular Mechanics* also predicted in 1941 radically new aircraft, including magnetic planes

Sam Love, Washington environmental consultant, wrote on self-sufficient homes in December 1975.

This urb of the future was built roughly as a wheel segment, its hub in a river bend.

Part of a six-lane transportation system envisioned by designer Walter Dorwin Teague, monorail train would be propeller-driven.

Electric rays would suspend in high, clear air a future city as conceived by Hugo Gernsback for a science magazine in 1922.



that would sustain flight by establishing their own "magnetic fields of sufficient strength to overcome the force of gravity."

According to Alfred P. Sloan, in *My Years With General Motors,* the tail fin, which symbolized the cars of the 1950s, appeared after Harley Earl, G. M.'s styling chief, saw a Lockheed P-38 fighter plane with twin engines, twin fuselages and twin tail fins. He was so inspired he took his designers to see the plane and within months their sketches started showing tail fins. In 1948 the fins appeared on the Cadillac with the "wholly new" V-8 engine. The fin, V-8 and automatic transmission became synonymous with the future.

For almost two decades the tail fin marked the car of tomorrow, particularly the Dream Cars—those one-of-a-kind custom creations that were built by Detroit to excite the public. In the 1950s and '60s the automobile magazines were full of pictures of exciting new futuristic cars, all labeled with tantalizing names such

as Atmos, Golden Rocket, Mystère and Gyron.

Many of these cars were never built to run; they spent their life as plaster and fiber glass full-size models that could be trucked from city to city for auto shows. But some could actually be driven. General Motors' 1951 Le Sabre, the first postwar Dream Car, featured such "advance styling" as a wraparound windshield, jetlike air intakes and tail fins. While some of Le Sabre's features actually made it into production, later designs featured "far-out" ideas such as airplane-like sticks for steering control, Plexiglas canopies and gas turbines.

Some even speculated that the car of tomorrow could be powered by a nuclear battery, which began to seem feasible as we actually started generating electric power from the atom in the 1950s. Dr. Henry L. Fisher, then president of the American Chemical Society, wrote in a 1954 issue of *The American Magazine* about the prospects for atomic energy and a battery he said would produce electricity directly from radioactive substances without the need for shielding:

"The first battery is the size of a thimble and produces about as much power as a fly in flight. It is the barest beginning. . . .

"Atomic power will transform the appearance of your home town. If you live in a community darkened by grime and afflicted with smog from . . . smokestacks, you can look forward to seeing your town transformed into a clean, healthful place. Atomic furnaces, unlike coal furnaces, need no smokestacks."

Life in this transformed town would be very different from the America of the 1950s. Harold Stassen, who in 1955 was a special assistant to President Eisenhower, wrote an article for *Ladies' Home Journal* presenting his ideas about a nuclear future:

"You hear talk from electronic engineers about houses without any wiring, but with portable, cheap baby watchers, bedmakers, cordless irons, lamps and toasters; and light, thin, motorless TV sets, refrigerators and air conditioners. Visionaries in the housing field dream of roll-up walls, bubble-shape houses that keep themselves clean and prefabrication methods that make it possible to 'move' from an old house to a new one without leaving your garden and neighbors.

"Yes, these things are fantastic [yet] with low-cost, limitless power—and that's what atomic energy is potentially—all sorts of dreams can come true."

The 1964 World's Fair was popular, but it signaled the end of an era. America of the 1960s was being rocked with political assassinations, civil rights movements, war and antimaterialism. In the face of this, fascination with the future waned.

In Ford film strip made in 1967, combination helicopter-hovercraft would do farm jobs by 2000.

A fruit-harvesting machine for future farms would have electronic eyes, computerized fingers.

Elegance

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Today the fantasy future is still just fantasy. One-hundred-mile-an-hour highways are turning into 55-mile-per-hour thoroughfares on which you can drive if you can find the gas. Inflation is catapulting the price of the suburban home into the stratosphere.

As we are increasingly aware that the dreams spawned by an availability of cheap, abundant energy have to change, we may recall that not all visionaries promoted the larger, the faster, the more powerful. Many envisioned an entirely different type of future community, one built around human-scale settlements harmoniously integrated into nature. Seeds were sown for this vision by Peter Kropotkin, the Russian anarchist philosopher, in his classic 1898 work, *Fields, Factories, and Workshops*. His book weaves an idyllic vision of people living in virtually self-reliant communities, balancing manual and intellectual labors. Food would be grown in the neighborhoods or nearby on small farms. Such a society, in Kropotkin's opinion, would require a minimum of government.

The book influenced a number of decentralist writers including Sir Ebenezer Howard, Lewis Mumford, Murray Bookchin and E. F. Schumacher, all strongly advocating small-scale communities and technology.

The tension between these visions and a highly centralized, technical one is still with us. Organizations such as The New Alchemy Institute on Cape Cod (SMITHSONIAN, February 1975), Farallones Institute in California, and the National Center for Appropriate Technology of Butte, Montana, are promoting technologies and programs that contribute to smaller-scale support systems. Their idea of an ideal future is one of neighborhoods and communities using solar energy, trading via small businesses, growing some of their own food organically and celebrating humanistic values. In contrast to this, visions are being promoted of giant habitats in space, mile-high cities and abundant power from fusion.

At this point no one can be sure what type of future we will have. But now that 1984 is around the corner and 2001 not far away, anybody want to predict what life *really* will be like in 2020?

Publicity still with palm trees and pretty girl promoted G.M.'s Le Sabre, one Detroit Dream Car that made it into production, complete with fins, wraparound windshield.

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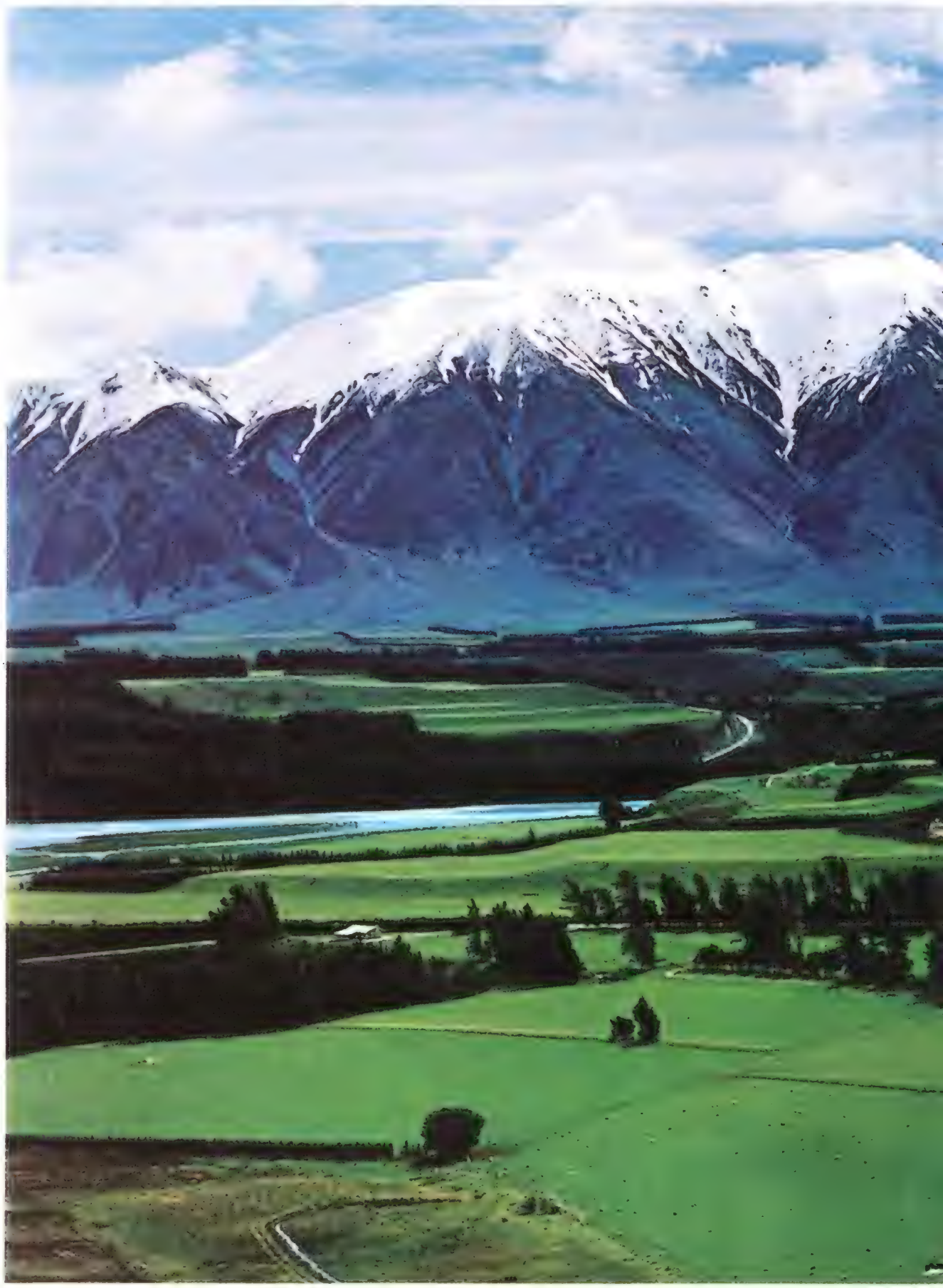
THE TASTE BEYOND PREMIUM SCOTCH

The South Pacific. Walk a glacier.



The South Pacific. It's so much more than you bargained for. Beyond the tropical islands you've dreamed about, there are other islands. And other things to do. Touch a little of each and you've taken the trip of a lifetime.

New Zealand. The World's Great Surprise Package. A few days in the harbor city of Auckland is the perfect beginning for the adventures ahead.

Walk the Parnell district where shopping is special. Buy a sheepskin rug without getting fleeced. Find an antique clock that once may have told time in London. Pick out a Maori carving that's waiting to be a conversation piece.

That night, have dinner at an old fire station. Taste the hearty food and the warm hospitality that's made New Zealand famous.

Chills and Thrills. Bright and early, fly across Cook Strait to the South Island. Refuel with a pub lunch in Christchurch. Stroll along the river Avon afterwards and make believe you're in England.

Now for some adventure. Just to the west are Mount Cook and the spectacular glaciers of New Zealand. A short flight and a gentle landing on skis puts you on the glacier itself. Take a walk you'll never forget.

Later, you'll watch the sun turn the mountains pink from a lovely room at the Hermitage. It reminds you of Switzerland at *one-half* the price. Sleep well. Tomorrow is for thrills.

In the morning, you'll take the short flight to Queenstown. You could spend endless days here sightseeing, shopping and relaxing; everywhere you turn there's activity. Spend the morning on the Shotover River panning

Run the rapids. Talk to a penguin.

Moments of incredible calm as you drift through stunning canyons, punctuated by wild whitewater rides. It leaves you out of breath and begging for more.

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This wild liontailed macaque exhibits the tufted tail and bushy mane characteristic of species.

By Alison Jolly

Frustrating search for the monkey with a lion's tail

The existence of these unusual macaques and other rare creatures is threatened by hydroelectric projects in South India

"This is how to treat an endangered species!" Rauf Ali yanked the liontailed macaque away from his curry. He dangled her by the scruff of her neck and tickled her stomach. Ranee appeared to laugh, as monkeys do, with open mouth showing only the tips of her canines. The spread white wings of her mane framed a black face full of mischief. She wriggled out of Rauf's grasp, bounced to his shoulder, and then hauled herself hand over hand into the tamarind tree above him. She looked back and jerked her head in the gesture that means, for monkey or child, "Try and catch me!"

Rauf sat down at the trestle table beneath the tree, beside J. Mangalaraj Johnson, warden of Mundanthurai Wildlife Sanctuary in the Western Ghat mountains of South India. We addressed ourselves to curry and rice served on fresh banana leaves for plates. Mr. Johnson turned a disapproving eye upward at orphan Ranee, whom he had confiscated from the man who had shot her mother. Ranee bounced tamarind twigs into the lunch. "Rauf," said Mr. Johnson, "you encourage that animal far too much." Then to the rest of us, he continued his conversation. "I have made all the arrangements: tomorrow the forest department's jeep will take you as far up the mountains as it can. You will see the forests we are trying to save, but don't expect to find liontails."

Around that table sat several scientists. Russ Mittermeier, chairman of the group that deals with primates for the International Union for the Conservation of Nature, had come fresh from the forests of Venezuela

and the Amazon. Clive Marsh had studied red colobus monkeys in Kenya and surveyed primates in Malaysia. John MacKinnon, authority on Bornean orangutans, is the only person who has watched the behavior of all four great apes in the wild. My own research had been with lemurs in Madagascar, so between us we had worked in every continent where primates occur.

We grinned—we looked forward to the mountain forests. We had all converged on Mr. Johnson's reserve in the hopes of seeing one of the world's rarest primates. There are no more than 800 wild liontailed macaques left, according to University of Miami primatologist Steven Green, who has studied them extensively. Certainly the population is tiny, endangered and still decreasing, and the liontail, with its gray-white mane and tasseled tail like that of a lion, is uniquely fascinating. There are a dozen or so species of macaques, from the Barbary apes of Gibraltar to the snow monkeys of Japan. They scamper across Asian landscapes, taking refuge on treetops or temple domes, but largely foraging on the ground. The liontail, in contrast, is a true tree-dweller. For those who wish to know what the differences are between tree and ground life, and what parallels the primates offer to our own ancestors' invasion of the savanna, the macaques gives us special insights—but only so long as the liontail remains as a base for comparison.

The liontails now stand at the center of a controversy which divides Indian scientists and planners. The two remaining viable populations of liontails lie in the only two remaining nuclei of unspoiled evergreen forests of South India: Silent Valley and the Ashambu Hills range of Agastya Malai, both in the mountain chain of the Western Ghats.

The Western Ghats begin north of Bombay and run 1,000 miles southward to the tip of the Indian peninsula. The Ghats rise from near sea level to the peak of Anai Mudi at 8,841 feet. Many plant and animal species are islanded on these mountains. Peninsular India broke loose from the primeval continent of Gondwanaland some 200 million years ago, and a few ancient creatures of Gondwanaland survive here today. There are freshwater sponges and hydroids with African or Madagascan affinities, earthworms and mollusks, fish and frogs.

Peninsular India met northern Asia perhaps 30 million years ago, with a force that is still crumpling up the Himalayas. New animals invaded the peninsula from the north, traveling over a bridge of highlands. These include many of the birds, like the cobalt and black fairy bluebird or the endangered great hornbill. Some of the genera are simply unique. The slender loris is a prosimian, a pre-monkey left over from the dawn of the primate line, which creeps along the nighttime branches like a banana on stilts. Its eye and hand are linked by the reflexes of an insect-hunter with apparently little capacity for other learning, but it hugs and grooms its single young as though it had a future, not just a past.

Biologist Rauf Ali plays with Ranee, an orphaned liontail protected by the forest department.

Still other animals once ranged throughout South Asia in the forests of the lowland plains: tiger, elephant and the wild ox called the gaur. They too now retreat to the hills as a final fortress, an inner keep which will be the last to surrender to Man.

Kerala plans a hydroelectric scheme which will destroy the ecology of Silent Valley. Tamil Nadu plans at least four dams which will take out the heartland of the Agastya Malai. How can these states—73 million people with per capita incomes of $133 a year—turn down any opportunity which would provide power and employment?

And yet, should their present need for development take precedence over saving forest species and communities for the long-term future? Is it progress to tamper

Primatologist Alison Jolly wrote about behavior of Madagascar's lemurs in SMITHSONIAN, *November 1978.*

too far with the forests that control the water supply of the plains below?

A nuclear installation, coal-fired power plants and solar energy are possible alternatives. But the political pressures for hydroelectric development are intense.

The four foreign primatologists seated under the tamarind tree were all concerned about the dams and the future of the Ghats. We had come south, lured by Rauf Ali, an Indian graduate student in biology, to the Agastya Malai range. Here there are already forest reserves which cover 350 square miles of rain forest, with, as Mr. Johnson writes, "tahr-trodden cliffs, eagle-hovering crags, honey-dripping ledges and owl-hooting rock faces." There are 47 species of mammals, including perhaps 200 liontails and at least 135 species of birds. But again, there is the prospect of the dams.

The day before we had seen the devastation around the latest dam to be completed. On such projects the Electricity Board uses as much manpower as possible, to provide all the employment it can. This means thousands of laborers: an estimated 5,000 men working for 15 years to build the new hydroelectric scheme. Each laborer brings his wife and family. Each family traps what it can for food and daily gathers firewood for cooking. Meanwhile timber merchants and firewood merchants drive up the damsite roads and clear ten times the concessions they are given. The workers, of course, plant farms and then claim squatters' rights; in the long run, it will take all the harshness of the law to turn them out.

"You will excuse me not coming with you into the hills, won't you?" Mr. Johnson said. "I must spend tomorrow in court again, working on ways to resettle the squatters we already have. . . ."

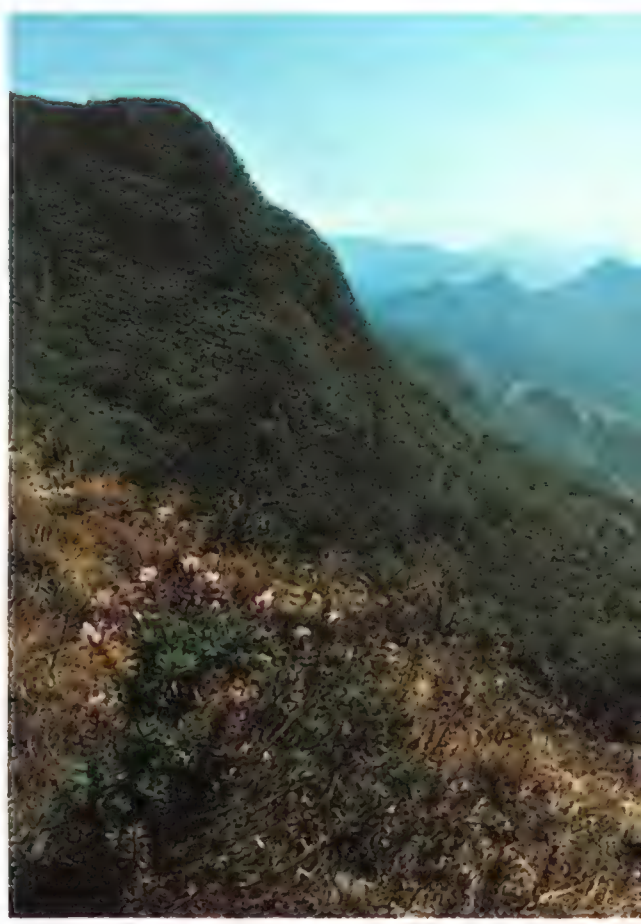
Rauf Ali, who knew all this, made mouth threats at a female bonnet macaque on the forest rest house roof. "I'm not coming, either," he said. "I must finish off my thesis on the bonnets. As far as I am concerned, they are the only intelligent primates in this reserve, and I'm sticking with them."

The bonnet glared back: fur dishwater brown, red all-too-human face scrofulously mottled under a punk-rock hairdo, left ear gone in a fracas, leaving only a cauliflowered stump, and deep wrinkles round its eyes like a prematurely wizened baby.

"Rauf," I said, "I think that is the ugliest single wild animal I have ever seen."

"It pains me to admit it about my favorite species," agreed Rauf. "You're right."

Next morning we woke early in the rest house kindly lent us by the Tamil Nadu Electricity Board, in spite of our views on conservation. Symbolically, their rest house looks both ways—westward to the range of Agastya Malai, forested peaks rising into clouds red



Clear-cutting of forest for tea plantations (left, top), has destroyed natural habitat in Agastya Malai.

with dawn, and eastward to the cities of the plain. The river Papanasam, "disposer of sin," trickles down its last waterfall, where 300,000 pilgrims come each year to bathe during the holy festival of Adi Amarasai. The sacred waterfall runs nearly dry since the dam was built. Now, the water descends in four huge pipes to irrigate rice fields below. Irrigation and electricity to run the field pumps have brought some prosperity to the parched villages of Tamil Nadu. The dawn light glinted upward from canals and ditches, among new rice which glowed vivid green, luminous as though it burned with green fire. India brought electricity to one-third of its villages by 1975 and, although there has been a slowdown since then, the government intends to continue increasing its power production. It may choose to drown temple sites, dry up sacred rivers, exterminate wild species, but no one can deny its people's need—only argue that destroying its own ecology is no way to meet that need.

The jeep rattled up, to start us into the hills. It crossed a bridge over the feed-pipes of the dam. Yet another kind of monkey paraded along the pipes. These were Hanuman langurs, light gray, with black hands and faces. Langurs are twice the size of the bonnet macaques. They promenaded on all fours, then ricocheted, leaping from the sides of the cutting, their long tails undulating behind them. Langurs are superb as a greyhound or racehorse is superb. Their gray peaked skulls and black eyebrows overhang the black face so that, at first glance, you do not see their eyes. They seem wholly animal—it is not a face, but a face mask.

The multimale troop, 45 animals or more, posed on the granite rocks. They groomed each other. Females borrowed each other's babies. A female in estrus juddered her head in invitation. The males bickered round her—one, shoved aside, rushed off to mount a still more subordinate male who grimaced in fear. Elsewhere, the same species of langur may live in single-male harems where a male that takes over the harem kills his rivals' babies, the sooner to father his own.

Four kinds of monkeys live in these mountains. We were leaving the gray langurs and brown bonnet macaques of the foothills to look for high-forest forms, the black Nilgiri langur and the black liontailed macaque. Nature here provides the design that scientists love: two genera, the langurs and macaques, distributed between two habitats, the high cool evergreen forest and the dry deciduous woods of the lowlands.

The jeep climbed and climbed a switchback track that once led to a cardamom clearing in the hills above. When we stopped, the trees were already close around us. The only trouble was that the path from there went straight up: up human steps, with roothholds to curl toes round, and up wild elephant steps,

South of Shencottah Gap in Western Ghats (above), the trees have been cleared for rubber plantations, and for grasslands maintained by regular burning. The creation of large reservoirs for electric power, like the one above, has resulted in loss of still more of region's original forest cover.

Looking for the liontailed macaque

A gray Hanuman langur, named for monkey god of the *Ramayana*, takes its ease in the Agastya Malai.

These slender lorises, nocturnal creatures the size of kittens, are survivors of a line of primates

thigh-high cylindrical scoops, with toenail marks gouged in the wet clay, each as wide as a human hand.

"What's that bird?" I asked for breathing space.

"Southern tree pie." John MacKinnon knew all the answers. The tree pie flapped off, a kaleidoscope of black, white and gold.

From 1,500 to 5,000 feet the forest around grew more and more luxuriant, wetter and wetter. Bird's-nest ferns hung high on the tree trunks. They catch and create their own soil, so they become living plant baskets for still other species. A wealth of endemic orchids dangled from branch forks, and mosses coated the perpetually wet rocks with a cold green sponge. I kept wanting to stop, even just long enough to look at the radial symmetry of the tree ferns, and the banks of rattan canes, each leaf a meter long, glinting in sprays down the hillsides like giants' geometry.

A black silhouette in the canopy looked down as we looked up. It made a strangled sneeze, like a hay fever victim with no handkerchief. It glared and decided to escalate its noise: cough-cough-cough-whoop, cough-whoop, cough-whoop. It was a male Nilgiri langur giving the alarm while his troop leaped away through the branches. He followed them springing through the treetops, bound after bound. As he left, the sun backlit the froth of pale brown fur round his head into a golden aureole.

Black langurs commonly live in one-male harems. The groups are territorial. Harem males whoop insults

that predates the monkeys and apes. They are found only in Sri Lanka and in India's Western Ghats.

at their rivals, bounding up and down in the treetops. They live in fairly sedentary bands, which averaged 15 animals in a study by primatologist John Oates of the City University of New York. They ate new and mature leaves, and concentrated on only three food species in 45 percent of Oates' feeding observations. Their staple three were among the most abundant of the forest plants. They could thus afford to police a limited area with a year-round food supply—under a tenth of a square mile for Oates' main study group.

"Any advance over six langurs, one a female with baby?" asked Clive.

"I saw nine," said John MacKinnon, and then came up with the thought: "Those black langurs look far too much like liontailed macaques. The two species are mimicking each other!"

Russ and Clive argued. Wet-forest animals are often darker than animals of dry or open country. The black langur and the black macaque just may be adapted to be seen from below as dark silhouettes, while gray Hanuman and brown bonnet are adapted to blend with rocks and bare ground. The black langurs' buffy head fuzz and the liontailed macaques' pale mane may each be devices to communicate within the species—markers to show which end has the face. Similar long tails undulate behind, as balancing organs for tree life. Finally, the stocky, dense-furred build of both animals is surely an answer to chilly mountain weather.

These convergences of appearance are perhaps all

Bonnet macaques are common in low-lying areas. Here, a mother with a face only her infant could love.

Hanuman langurs such as these gather for communal grooming sessions on rocks or even on temple roofs.

due to similar habitat, but John thought that the two monkeys might have converged for still other reasons. If they compete directly for food, they may respond to each other's looks, and partly exclude each other from the same areas (John Oates says that black langurs give way to liontails). Another possibility is that they are tricking predators. If so, the smaller liontail might be aping the larger, more agile langur, which would be a more elusive prey.

If this was so during the evolutionary time, it does the macaque no good now. Many Indians believe that black langurs have medicinal properties. To cure liver complaints, drink black langur blood for three successive mornings, and on the fourth day eat the liver. Best to use several monkeys, because liver does not keep for four days in this climate. To cure chest complaints, rub black monkey extract on the chest, or drink the broth for general sexual potency and rejuvenation. Because few townsmen see, or care about, the difference between black macaque and black langur, the rare macaque is also drunk, eaten and rubbed on if the hunters find it first.

We found four troops of black langurs on the way up. With the third langur group a squirrel was feeding —a Malabar giant squirrel, a squirrel as large as a cat with cream head and throat, chestnut flanks and thighs, and a long tail that seemed to have outgrown its body (below). The squirrel was shredding the seeds of a wild durian tree, the liontails' favorite food. The durian is one of the great trees of the forest canopy. Its fruits are clusters of spiky green balls, each like a chestnut burr but the size of a small cantaloupe. Seeds like shiny chestnuts fill the fruit.

The trees' strategy is clearly to swamp the many seed-eaters, but the monkeys are more confusing. Monkeys are always dropping food, which leaves monkey watchers puzzled and arguing. Are wild monkeys really limited by their food supply? If so, why do they waste so much of it? If not, why don't their populations grow? And why do they so often defend feeding territories which vary in size with the richness of the forest? None of the questions has a really satisfactory answer, as yet. A part of the answer seems to be that monkeys cannot live on a uniform diet. Too much of any one thing may poison them with the plants' defensive chemicals. Too little variety may leave out essential nutrients. Again, the monkeys are very like us.

The macaques are more like us than the langurs. Leaf-eating langurs are relative specialists, concentrating on few plant species. The liontailed macaques are far more versatile. Instead of sticking to a defended territory, Steven Green's main study group shifted

Malabar giant squirrel, large as a cat, leaps more than 20 feet in moving from tree to tree.

Brightly colored fairy bluebird, about size of a starling, lives on fruits of the evergreen forest.

The endangered great hornbill is more than yard long. Bill is hollow and lighter than it looks.

their diet from season to season, and their range as well. In some months they were on the ridges, at other times in valleys, or even foraging on narrow cliff ledges for the fruit of a *Bentinckia,* an endangered endemic palm. The troop ate at least 65 different plant foods, as well as lizards and insects. They ranged over two square miles, an area far too large to defend. Like hunter-gatherer humans, macaques skim the cream off the forests' varied riches which concentrate sugar, fat and animal protein—but they need space to survive.

We passed a tiny altar in the forest: one phallic stone surrounded by wilting flower-wreaths and an old medicine bottle of incense sticks. This was an altar to Ayyappa, a tribal god of the forest thought to be older even than the gods of the Hindus. A man came to greet us from the cardamom plantation beyond, a man with horizontal brows and cheek bones and a grin that almost matched his mustache, which curled in a full circle at either end. Our host was of "tribal" stock.

Kerala alone has a forest-living population of some two million "tribals." They have always been despised and exploited by the men of the plains. Anthropologist Brian Morris tells how Pandaram families approaching a village tie back their unruly frizzy black hair as best they can, to conform with the villagers' notion of civilized behavior. They offer for sale the produce of the forest: wild resin and cinnamon, meat and honey. They gather honey by feats of courage, walking the branches of bee-trees at night a hundred feet above ground. They may, surreptitiously, offer the skinned carcass of a black monkey, wrapped up in a little package of leaves.

Then they are cheated. They are offered perhaps 45 rupees for a four-gallon tin of honey, worth 280 rupees in the plains below. In the end, tribesmen might sell themselves. Caught in a mesh of debts, they could enter bonded labor, next door to slavery.

The government has tried to help them by abolishing bonded labor and starting cooperative agricultural schemes. So far, though, tribesmen tend to lease their new lands to immigrants from the plains and slip off again to their woods. In the shrinking compass of forest which remains, they destroy the woods and wildlife, but they have neither desire nor ability to settle down in marginal homesteads.

The second question is the settlers. Kerala's officially registered forest area declined from 5,000 square miles to 3,600 square miles between 1940 and 1970. Perhaps a third of officially recognized loss went to organized schemes. The other two-thirds went to agriculture, by "assignment and encroachment." Officials wryly describe instant encroachment: you can pay to have a bit of forest cleared, a house and fence built, and uprooted banana palms stuck in the ground. By the time a forester arrives, you claim to have been settled for years—look how tall the bananas have grown!

The squatters, the women who walk out of the woods with firewood on their heads, the timber lorries which ravage the teak and rosewood over ten times the area of their concession, the smugglers of sandalwood, all these are too small individually and too large in their sum total for effective policing.

Then there are the cardamom plantations. Cardamom plantations are still counted on the maps as forest. Only they are not. Originally, 80 percent of the canopy is left: noble trees, separate in their majesty. The other layers, though, are gone, and the larger trees suffer high wind losses. The ground cover is only moss and plaques of blue-green liverwort. This is not forest —in its lack of riches, of moisture, of future.

Gaur are the world's largest wild oxen, sometimes weighing more than a ton. Fierce in defense of their young, gaur will often stand and fight when attacked by a tiger. Although a semidomesticated form, the gayal, is found in India, the gaur is endangered in the wild, and few exist even in zoos.

"Congratulations," said John. "You've got the first leech." I pulled the creature off my arm, bloated to a sphere an inch in diameter, and rapidly discouraged the horde of slim quarter-inch leeches yearning toward me for the chance to distend likewise. I should not have objected, since leech bites do not hurt, but it had pumped the bite so full of anticoagulant that it bled for 42 minutes. I timed that first one, but soon we gave up noticing the machine-gunned effect around each other's ankles.

Our hosts, the cardamom pickers, interrupted us with lunch from their own store of semolina boiled with red chilis and cardamom seeds. Then, guided by our friend of the prehistoric face and Hercule Poirot mustache, we started serious walking.

We walked hopefully up and down and crisscross in the cardamom, where liontails sometimes visit to feed in the canopy. We grew impatient with cardamom and walked and clambered and pushed through animal trails in the forest. All that day and the next we walked looking for liontails.

We saw the pugmarks of tigers, wallows where wild elephants squelched through bamboo brakes, fairy bluebirds and golden-backed woodpeckers, and endemic *Bentinckia* palms.

But this is no adventure story. This is a story of our search for the invisible.

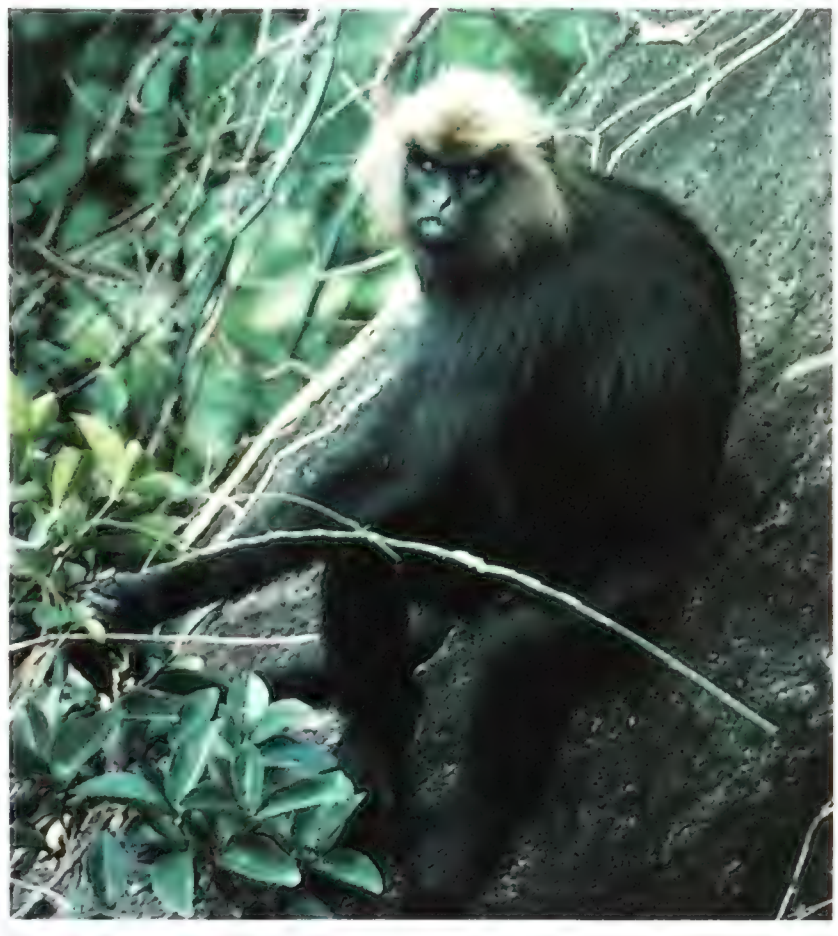
This is only a ghost story in the making.

At last, after two days' walking, we stopped in the headwaters of a mountain stream which becomes the Valayar River of the plains below. The mist swirled higher. Sunlight sparkled through on the many-layered foliage of the *shola,* the tangled streamside refuge for all rain-forest species. Sunlight rebounded from tiny waterfalls and slick black granite boulders, while the ravine filled with the songs of birds.

There, as Mr. Johnson promised us, was the backdrop, the living community of the mountain forests. But we did not see the macaques for which we were searching. Instead we saw the emptying stage where first one species, then another, becomes so rare that it disappears.

The *Ramayana,* India's 2,500-year-old epic of gods and heroes, begins with a vision of dark clouds condensing over the mountains, over that bird-loud stream where we finally gave up and turned back toward settled lands. In the modern prose version by R. K. Narayan, the river flows down the slopes in streams that scour the mountainside of its treasures of minerals and essences, "verily like a woman of pleasure gently detaching the valuables from her patron during caresses." The river descends and distributes its gifts evenly to the plains: precious stones and sandalwood, peacock feathers and iridescent flower petals.

Unless India makes a deliberate choice to save the ancient treasures of its hills—not just the minerals and essences but the creatures as well—and unless international funds are available to support that choice, Mr. Johnson will one day say to his Indian colleagues, to foreign visitors, to you if you travel to the Western Ghats, "You will not see the liontail macaque. There are none left to see."



Dark-furred Nilgiri langurs, which look much like smaller liontails, live only in the Western Ghats.

These juvenile liontails are at play in a tree. By some estimates, only about 800 liontails survive.

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VOLKSWAGEN DOES IT AGAIN

Acquired through the Lillie P. Bliss Bequest

Painted in 1919, well before his first visit to the United States in 1931, Fernand Léger's *Study for 'The City'* was a testament to the enthusiasm he already felt for the dynamism of modern cities.

By John Canaday

The avant-garde a half-century ago: what it produced

New York's Museum of Modern Art, 50 years old this month, celebrates with a survey of what was prophetic in the arts at the time

Americans who spent their college years during the 1920s (and there are still a lot of us around) have the good fortune to have lived through that wonderful and terrible decade twice, a double adventure in discovery. We were growing up at a time when the best things in life (or what we thought of as the best things in life) were offered in abundance by a society that left us free to invent our own ways of enjoying them; years later, under more sober circumstances, we discovered the international adventure of which our early one had been only a part. It may be true of other decades as well: that young people live through them as a first-hand experience at one level, only to discover later what had been going on at another, but it can never have been more true than in the United States during the years of change between the end of World War I in 1918 and the stock market crash of 1929.

That same year, 1929, which ushered in the Great Depression (SMITHSONIAN, October 1979) saw the birth of the Museum of Modern Art in New York. The museum is now celebrating its 50th anniversary with an exhibition "Art of the 20s" (on view from November 16 through January 22, 1980) reviewing the trends in painting, sculpture, architecture, design, prints, drawings, photography and film that were current at the moment of its founding. William S. Lieberman, who directed the exhibition, rigorously avoided the temptation to include forebears and descendants of the trends represented. This means that everything in this historically compact exhibition (with the exception of three paintings) was done between 1919 and 1929 and is therefore now between 50 and 60 years old, raising the question as to just how "modern" the arts of the 1920s can look in their chronological middle age, isolated from their radical ancestors and presumably more radical progeny.

One thing is certain: Americans who have grown up with the Museum of Modern Art (MOMA) as an omnipresence in their cultural life, who cannot even remember a time when MOMA wasn't there, can hardly imagine the impact of its early exhibitions on a public that had been unaware that art of such a kind had been going on. For anyone who does remember, this anniversary exhibition is by second nature a tribute to the museum's position as a major educational force in American life, a well-deserved (if self-administered) pat on the back for the institution that did the most—single-handedly in its early years—to close the gap between European and American culture in the first half of our century.

Henry James examined that gap a hundred years ago in stories like *The American, The Europeans* and *Daisy Miller,* all written at the end of the 1870s, but the gap was just as wide in the 1920s, or even wider—not because nothing had changed, but because so much had, and because the change in the arts after 1900 had been faster and more drastic abroad than here. In the first years of the new century, Fauvism (for which read Matisse) and Cubism (for which read Picasso) had made a breach with the past that put art beyond the comprehension of the very Europeans—the established gentry—that James' Americans had yet to catch up with. To make things worse, widening the breach into a chasm, there had appeared during the years of World War I a nihilistic art movement, or rather nonart movement, called Dada, in which all rational art values were declared invalid and sheer outrageous impertinence became a basic esthetic principle.

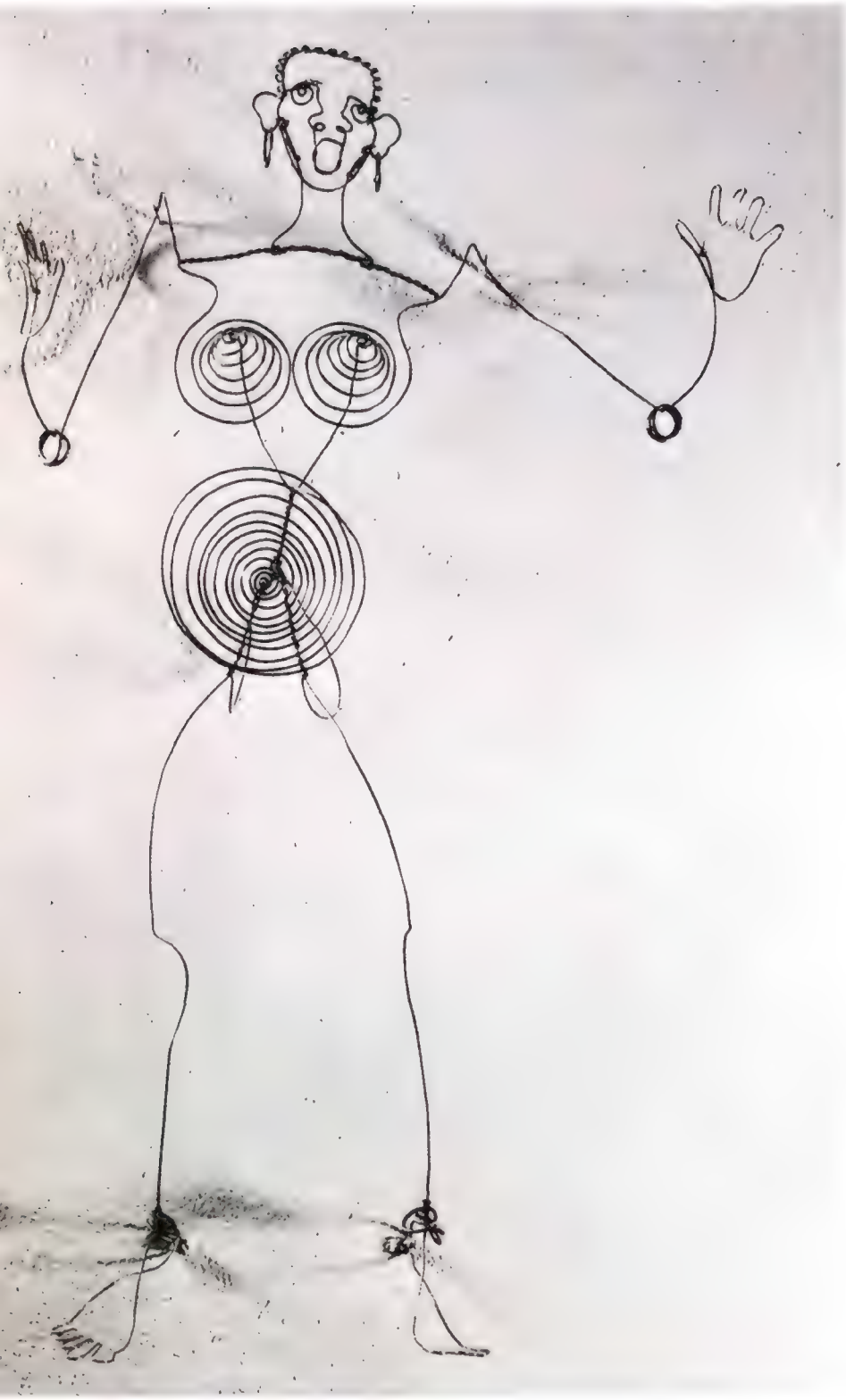
For most, modern art was a puzzle

These—Fauvism, Cubism, Dada—were the revolutions that generated the art of the 1920s, but while all this was happening, the term "impressionistic" remained roughly synonymous with "modern" in the vague terrain of the American art vocabulary, except among a few communities of creative intellectuals in New York, Provincetown, Taos and occasional offshoot pioneer settlements in the hinterlands. New York had been scandalized by the innovations of modern art in the Armory Show of 1913, and the war years

John Canaday has retired from the New York Times *after 17 years as its art critic. He has written 14 books; the latest,* What is Art? *will be out in the spring.*

A 50th-anniversary showing at MOMA

Gift of the artist



Gift of Abby Aldrich Rockefeller

A museum shocker that inevitably stopped viewers cold, Pierre Roy's fantastical *Danger on the Stairs* has been taken out of storage for this show.

checked the assimilation of this introduction. For the country at large, modern art was best known in the 1920s as an esoteric puzzle, or a put-on, if it was known at all. During the early years of the decade, Marcel Duchamp's *Nude Descending a Staircase,* the prime shocker of the Armory Show, was still good for a laugh or a diatribe in the feature sections of local newspapers, where it appeared sporadically. (The Hearst chain seemed to regard it as a threat to American life second only to the "Yellow Peril.")

As to what modern art was really all about, there was very little seepage from New York and its scattered outposts even into universities of the kind where, today, students in freshman art-survey courses are likely to learn more about Duchamp than Giotto. The exception was Harvard, where a great professor, Paul J.

One of at least three versions by Alexander Calder of American dancer and celebrity Josephine Baker, who became an international cynosure in prewar Paris.

Swiss master surrealist and individualist Paul Klee composed *Twittering Machine* of watercolor, pen and ink in 1922 as a friendly satire on the machine cult.

Katherine S. Dreier Bequest

Kurt Schwitters' little collages (this one, *Merz 83: Drawing F,* is 5¾ by 4½ inches) became key works of modern era, set pattern for much to come.

Sachs, recognized that modern art could be approached art-historically, both as a revolution and as a natural product of the past, which of course all revolutions are. It was this idea that materialized in the Museum of Modern Art, with a Sachs disciple, Alfred H. Barr jr., as its first director. We are so accustomed to the idea today that we have forgotten that when MOMA was founded, its name seemed a contradiction in terms. Even Gertrude Stein felt that way and went on record with the pronouncement that you could be modern or you could be a museum, but you couldn't be both.

"Art of the 20s" is the kind of survey that the museum might have staged for its opening gun, a summing up of the immediate scene in 1929; but the blast of the unfamiliar, even in Manhattan, could have been fatal. There was a great deal of catching up to be done before the American public would be able to see contemporary art in explanatory perspective with the past. Toward that end, MOMA's opening exhibition brought van Gogh, Cézanne, Seurat and Gauguin out of their dimmish positions as half-understood modernists and into focus as Old Masters. After that, exhibitions like Alfred Barr's landmark *Cubism and Abstract Art* were comprehensible to a public that was eager to make up for lost time. It was at the museum in the 1930s that the college generations of the 1920s lived through their second adventure of discovery.

In effect, "Art of the 20s" is a summary of dozens of exhibitions held at MOMA over the years, with the material reorganized in the perspective of a long backward look. What is surprising in this assemblage of familiar works is the sustained vigor and, above all, the variety of what was produced in that single decade.

And yet even the most extreme manifestations of the revolution called modern art in the 1920s had been inherent in the even more radical revolution of the previous decade. The 1920s was a period of consolidation rather than innovation, a time when the seminal innovations of Fauvism, Cubism and Dada were being examined and disciplined. Everything was going on at once, from romantic realism to pure abstraction, from mechanistic constructions to morbid fantasy, from social protest to poetic introversion.

A 50th-anniversary showing at MOMA

Given anonymously

While other American artists were making pilgrimages to France and Germany, or at least looking in that

Jeremiahs of the 1920s, confused by the prolixity and variety of the scene around them, lamented the disruptions in art and social conventions as evidence that the world was going to pieces. Actually, the shifts in values were symptoms of the coming into balance of things that seemed unrelated or even opposed to one another—specifically, over a wide field with art as its most vivid manifestation, the fusion of European sophistication and the American adventure of innocence in process of being enthusiastically lost.

We call it the Jazz Age, and there is a tendency to denigrate the Twenties as a decade of frivolity when Americans ignored international developments of profound significance—or even to regard the Jazz Age scene as a myth. Anyone who was there knows that it was no myth; life for the college generations of the 1920s was one continuous proto-Woodstock—much milder, it is true, but a parallel all the same. There was no rejection of a social and political structure that was, or seemed to be, working quite satisfactorily for us; all we wanted was freedom to do as we pleased within it. That is a great difference from Woodstock, indeed, but American youth nevertheless was engaged in an exciting revolution in manners, sometimes called morals, even if it was a long way from being a counterculture. Bobbed hair, short skirts, petting, jazz and bootleg booze were its manifestations, just as beards, nudity, uninhibited sex, rock and drugs characterized Woodstock.

These reflections of an adventure that was exciting to live through are now overfamiliar at second hand, but they are no less valid historically for having been abused as the clichés of the period. And the American adventure has more to do with European art of the period than is generally recognized. We are accustomed to thinking of modern art in this country as having begun as an importation from Europe, but as a matter of fact the 1920s were years of cultural exchange. At one level, the acknowledged one, there was Gertrude Stein's salon in Paris, but if the art on her walls was French, she remained through and through a bipartisan cultural messiah and sociological observer, writing her most ambitious and difficult work, *The Making of Americans,* as a colossus straddling the Atlantic with one massive foot placed firmly in the rue de Fleurus and the other in Baltimore.

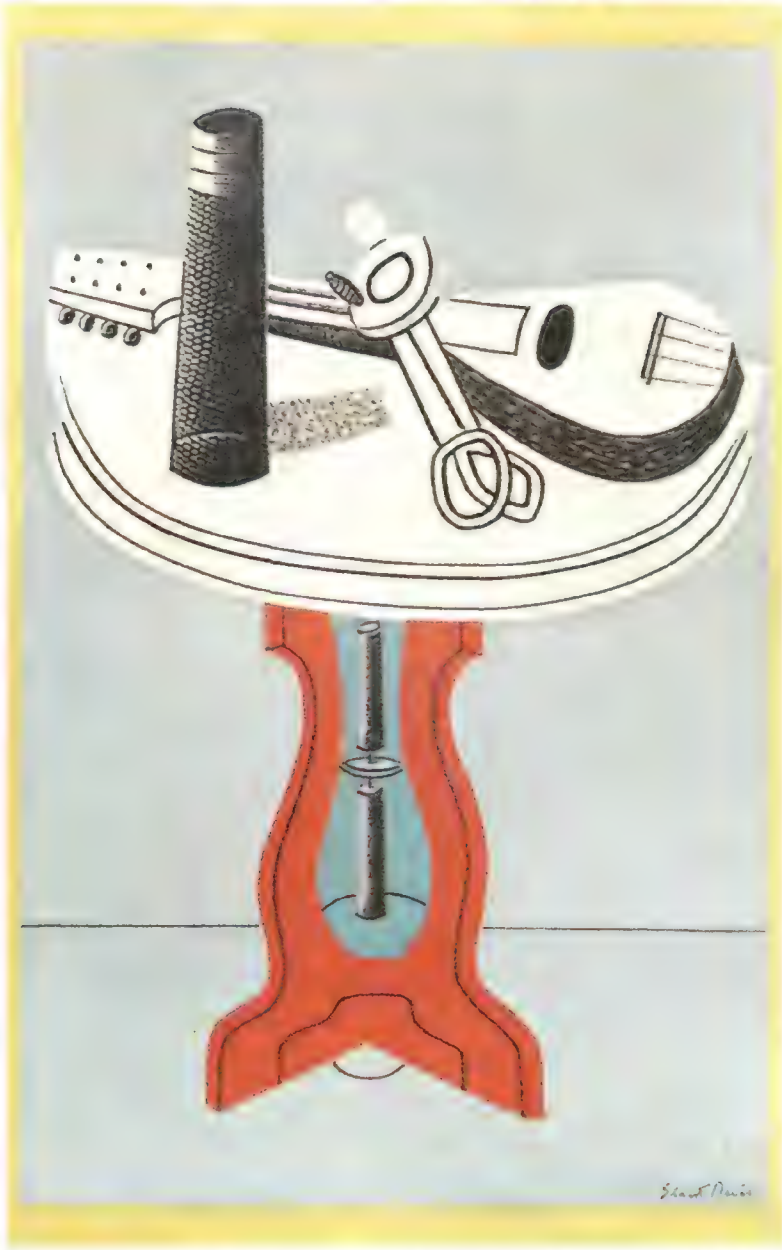
But on another level, one that everyone could understand, our fair exchange for the sophisticated arts that Europe was offering to a small group of American intellectuals was the popular indigenous arts that sprang up spontaneously across the country. We tend to forget, or to dismiss as of minor impor-

direction, Edward Hopper went deeper into his native country. This is his *House by the Railroad,* 1925.

tance, that the same Parisian avant-garde of the 1920s who were entertained by the inventions of the French composers—Satie, Milhaud and Poulenc—were also bowled over by the sometimes anonymous masters of American jazz. If rich American women still went to Paris for their clothes, Parisians in turn were adopting less traditional American modes and manners, and Americanisms were as shocking to the conservative French as modern art was to conservative Americans.

As late as the summer of 1929, an old-guard professor in a Parisian lycée could rebuke a visiting U.S. college student because his crude country had invented a degenerate alcoholic mixture pronounced *coq-taille* that was corrupting the palate at fashionable gatherings in the country of fine wines. And Alex-

Abby Aldrich Rockefeller Fund



Artists whose work reflected creative fervor of the age: American Stuart Davis' *Egg Beater, V,* 1930, led to pop art. Romanian Constantin Brancusi lived in Paris. Below, his *Socrates,* sculpted in 1923.

Mrs. Simon Guggenheim Fund

ander Calder's wire drawing of a prancing black girl (p. 110) is a reminder that this same professor's wife was fascinated by another American contribution to cultural exchange, Josephine Baker *(Imaginez-vous, une noire qui est chic comme ça!).* Americans in Paris might pay homage to French culture at the Comédie Française; Frenchmen visiting New York paid their homage to a younger world at Minsky's, with the result that burlesque as an art form was soon rationalized into respectability by critics who gave it historical status by calling it a modern commedia dell'arte.

The most alert, vigorous and inventive segments of the international cultural world centered in Paris took American popular arts more seriously than we took them at home. If there are disproportionately few direct reflections of American exchange in the European fine arts of the 1920s, this nation can still be given credit for some of the spirit of exploration and vitality that infused the Parisian avant-garde. There were direct reflections as well. "Art of the 20s" includes a *Study for 'The City'* (p.108), Léger's declaration of love for a city that only since World War I had attained its stature as the great metropolis of the century—New York. Léger did not actually visit New York until the 1930s—when he made several trips—but in the boom decade of the 1920s that dynamic, clamorous city was as well known in Europe through photographs and movies as Paris was to Americans who had never been there. Léger found even more than he expected. Everything from the skyline and the spectacle of Times Square at night with its electric signs on down to the drugstore-window displays excited him. His parallel in America was Stuart Davis, a proselytizing modernist whose abstractions based on commonplace motifs (p. 113), thoroughly American in their syncopated forms, deny the general assumption that American abstraction always mimicked European models. In an imaginary exhibition that could be called "Art of the 20s as Prophecy," Léger and Davis would share a star spot as precursors of pop art, which flourished in the 1960s.

"Art of the 20s" includes work by other prophets, notably Kurt Schwitters, whose *Merz* collages (p. 111) and constructions have thousands of descendants in recent sculptures welded or nailed together from scrap iron, bits and pieces of demolished houses and other man-made detritus. The exhibition offers as well a failed prophecy or two, most serious in the architectural section. When MOMA was young, the functionalism proclaimed by the Bauhaus and related architectural schools seemed the prophecy of a brave new world that was already dawning, a world of glass, concrete and steel buildings, at once stark, beautiful and efficient, that would transform our cities from a messy conglomeration of pseudo-historical styles into pure, gleaming harmonies (nobody seemed to notice that it was precisely the messy conglomeration that had fascinated artists). But disillusion with the monotonous glass boxes that now crowd our cities has inspired critics, and the museum itself, to look more sympathetically at architecture in which the spirit may be better served by the violation of functional purism.

Visitors to "Art of the 20s" whose memories are long enough may find themselves asking one bothersome question: where are the Mexicans? The "Mexican renaissance" was at its height in the 1920s; its painters (Rivera, Orozco, Siqueiros) were dedicated to the glorification of the agrarian revolution, the damnation of the Spanish colonials and the excoriation of American capitalists in antiabstract art that was to revitalize art as a weapon of social consciousness.

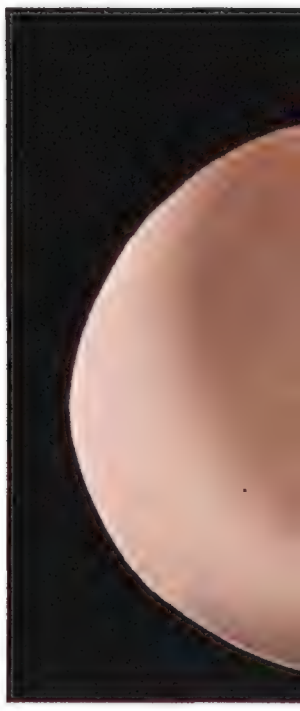
The explanation is that "Art of the 20s" is made up of works in the museum's permanent collections, which hold no important Mexican paintings before 1930—not surprising since these paintings were mostly wall frescoes. The limitation does account, however, for some lesser inconsistencies (Kandinsky, the very definition of a seminal figure, could be better represented), but it also rebounds favorably in the context of this anniversary exhibition. Half a century ago this museum was founded without a collection of any kind. Today its collections (some 3,500 pieces) are encyclopedias of the arts of the late 19th and 20th centuries to date, unexcelled in their combination of range and quality by collections of modern art anywhere else in the world. That "Art of the 20s" could be assembled from MOMA's own storerooms is the most impressive tribute of all on its 50th anniversary.

Max Ernst made this painting, with wooden gate—*Two Children Are Threatened by a Nightingale*—in 1924.

2 enfants sont menacés par un rossignol

By Athelstan Spilhaus

To see the oceans, slice up the land



All maps are compromises, and on a planet that is mostly water the trick is to devise one that will show the world's seas properly

We are land creatures and think of the world as land. We make maps to show where we are on the land, and usually show the oceans only as featureless borders.

But ours is a water planet, with a single great ocean covering nearly three-quarters of its surface. Winds and currents sweep around a watery globe and whales move from hemisphere to hemisphere in ways which maps that emphasize land cannot show.

Astronauts, who have seen our world from afar, are well aware of this truth. Oceanographers and navigators are, too. They appreciate the standard Mercator maps (p. 118) so useful for navigation, but cringe to see them as the only maps on schoolroom walls. Mercator maps satisfy excellently the purpose for which they were designed—plotting courses at sea—but cannot show the whole world as it really is.

No flat map can be perfect. It is not possible to show a three-dimensional sphere undistorted on a two-dimensional page. But here I offer maps of the world oceans that show them in their entirety as well as any flat map so far possibly can.

The surface of the globe is a single, continuous spherical skin like that of a rubber ball. To show it on a flat map, you have to cut it and flatten it out. Such cuts are known to map makers as interruptions and form the edges of the map. When you flatten the whole surface or any part of it, you inevitably introduce distortions of shape, scale or direction or combinations of these.

A particular projection is chosen to preserve a particular property, such as equal areas or correct shapes, despite the necessary distortions. The property preserved depends on the information to be shown. For example, winds and currents should be shown on a "conformal" map, like Mercator's, on which latitude and longitude lines cross at right angles so that the directions of the currents and winds may be plotted and read easily. But on such a map, the sizes of land masses or seas near the poles are wildly exaggerated, as in the case of Greenland on Mercator's map with its parallel longitude lines. For other purposes—such as plotting population density, say—it is desirable to have an "equal area" map: one in which geographical features are shown in their proper proportion to each other.

Just as we choose the projection for a particular application, we should choose the interruptions so that the edges of the map do not cut the area of interest. Here we are interested in maps that show all the oceans as a single connected body of water. To show all the continents as a quasi-connected single world-island is much easier because there is less land and most of it is in the northern hemisphere.

Clearly, the interruptions or cuts that form the edges of our map must fall within land if the ocean is not to be interrupted by the edges. But too many interruptions can be quite disturbing.

An unconventional oceanographer, Spilhaus last combined plate tectonics and solid geometry to produce geo-art (SMITHSONIAN, *August 1976*).

A model of the Earth is cut and flattened to produce a most unusual map. This approach is not arbitrary: it may be the best way to show that the world's oceans are really one, and to make us realize that on our planet dry land is the exception rather than the rule.

Interrupted maps of the oceans have been used for a long time, but do not show the oceans as a whole, and the all-important connection of the three ocean units around Antarctica is often lost, as is the unity of the Arctic and Atlantic oceans. For example, Goode's map of the oceans (p. 119) is not good because it splits the oceans in this way, and is just three separate maps of the three oceans placed side by side. In fact, most geographers, being preoccupied with land, put their interruptions in the middle of our oceans. We who are preoccupied with the oceans must put our interruptions entirely within their land.

Instead of slicing the globe to make the interruption for a flat map, we can make a single pinprick and expand it to become the edge of the map. Because we are interested only in the oceans and their edges, we should choose this point in the middle of the largest land mass that is farthest from the oceans in every direction. It is this land that will suffer the greatest distortion.

The single point on Earth farthest away from the ocean in all directions lies in the middle of the Asian continent in the Xinjiang (Sinkiang) province of China, near its borders with the Soviet Union and Mongolia. Making a pinprick interruption at this point produces a circular map whose center is the opposite of this point; it falls in the Pacific Ocean southeast of Easter Island. This pinprick in Xinjiang, stretched to form the edge of the map, makes a land fringe of the Asian continent which frames the world's oceans.

But the distortions near the edge of such a map are immense, and so most maps are made by starting with more than one pinprick.

The most common way of interrupting the skin for world maps is to make two pinpricks, at the North and South Poles, and a cut joining them through the Pacific Ocean. The skin is then flattened into rectangular or elliptical forms with the poles, with their maximum distortion, at the top and bottom. (In the case of Mercator's map the distortion at the poles is such that they cannot be shown at all.)

But having decided to use two pinpricks, you need not limit yourself to the geographic poles. You can use any two points for poles that are opposite each other.

The familiar Mercator projection is excellent for plotting courses at sea but not as good for visualizing the planet. The connection of the oceans around Antarctica is lost, as are both the geographic poles.

If you pierce a globe with a knitting needle so that the needle passes through the center of the sphere, it will come out at a point exactly opposite its point of entry (p. 120). These points are called antipodes.

The old children's notion of digging vertically through the Earth (or the new nuclear scare story of melting through) and coming out in China is a misconception. If you dug vertically from any point in the conterminous United States, you would come out in the Indian Ocean. In fact, if the game is played on almost any continent, the result is the same: you surface in an ocean! Only about three percent of the Earth's land is antipodal, or opposite other land.

If we wish to show the oceans as a whole, the poles (which, of course, are antipodes) on the map can no longer be the North and South geographic poles, because the South Pole is in the middle of the Antarctic continent and the North Pole is in the middle of the Arctic Ocean. Instead, poles must be chosen on two of the few antipodal points which are on connected land. Then we make our cut for the edge across that land.

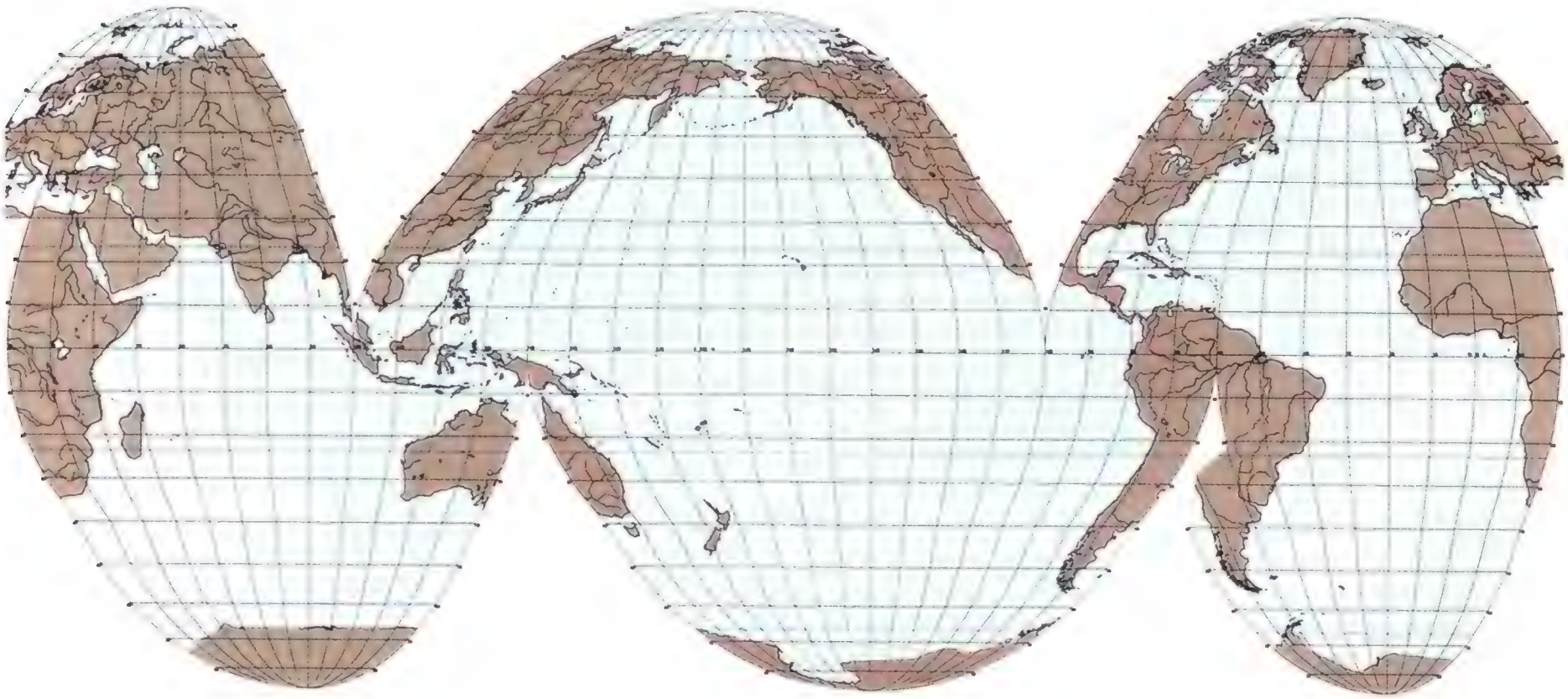
To show which land is opposite other land we can make a map of antipodes by taking a pair of maps of two hemispheres and putting them back to back with the North Pole covering the South Pole. The resulting map of antipodes (p. 121) shows the only land that is opposite other land.

The only substantial areas of antipodal land are four pairs: Sumatra-South America and Borneo-South America on the equator; Greenland-Antarctica; and China-South America. Greenland and Antarctica are not suitable for our purpose as they are islands and thus not joined by land. The cut from Borneo to South America is also unsuitable because Borneo is an island.

The interruption from Sumatra to South America cuts only the narrow Malacca and Bering straits. This is the cut I used for the first equal-area and conformal maps of the whole ocean which I devised in 1942 (SMITHSONIAN, August 1976). However, the pole in Sumatra and its antipode on the coast of South America are very close to the oceans and distortions of the edges of the ocean are great at these points.

So the best poles for whole-ocean maps are the substantial antipodal land area in China (near Hankou) and South America (near Córdoba in Argentina) with a cut joining them across the Bering Strait. The Bering Strait, although navigable, is so shallow and narrow that it constitutes no real oceanic connection.

These poles and the Bering Strait cut can be used with any existing map projection, such as my map of the world ocean (p. 120). This map is based on a new projection of the world in a square devised by geodesists Robert Hanson and Erwin Schmid, who helped me with the equations and programmed the computers which drew the maps. The distortions at the two corners around the poles in South America and China are very great indeed, but it is in the land that we wish to concentrate maximum distortions. This map has the extraordinary additional property of being doubly-periodic. This means that if you had multiple



This map by Goode was an attempt to convey how much of the Earth is occupied by water, but it, too, fails to show clearly how the oceans are really one centered around the Southern Hemisphere.

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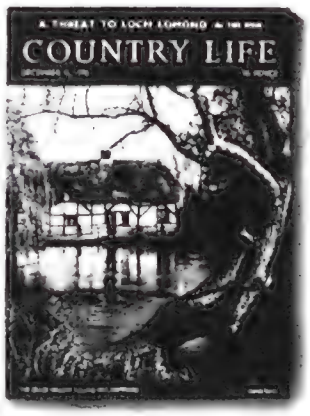

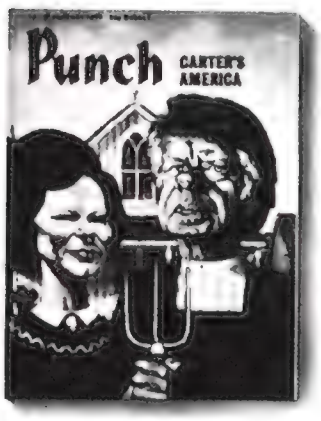

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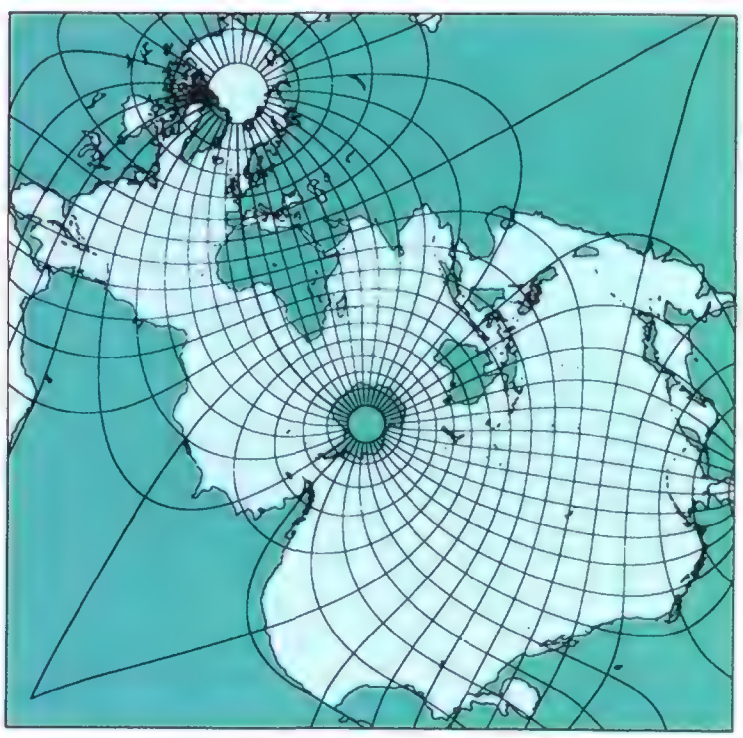
Antipodes are points on Earth opposite each other; above, needle through China pierces South America. Map below, by the author, uses the same antipodes for its poles at the top right, bottom left corners.



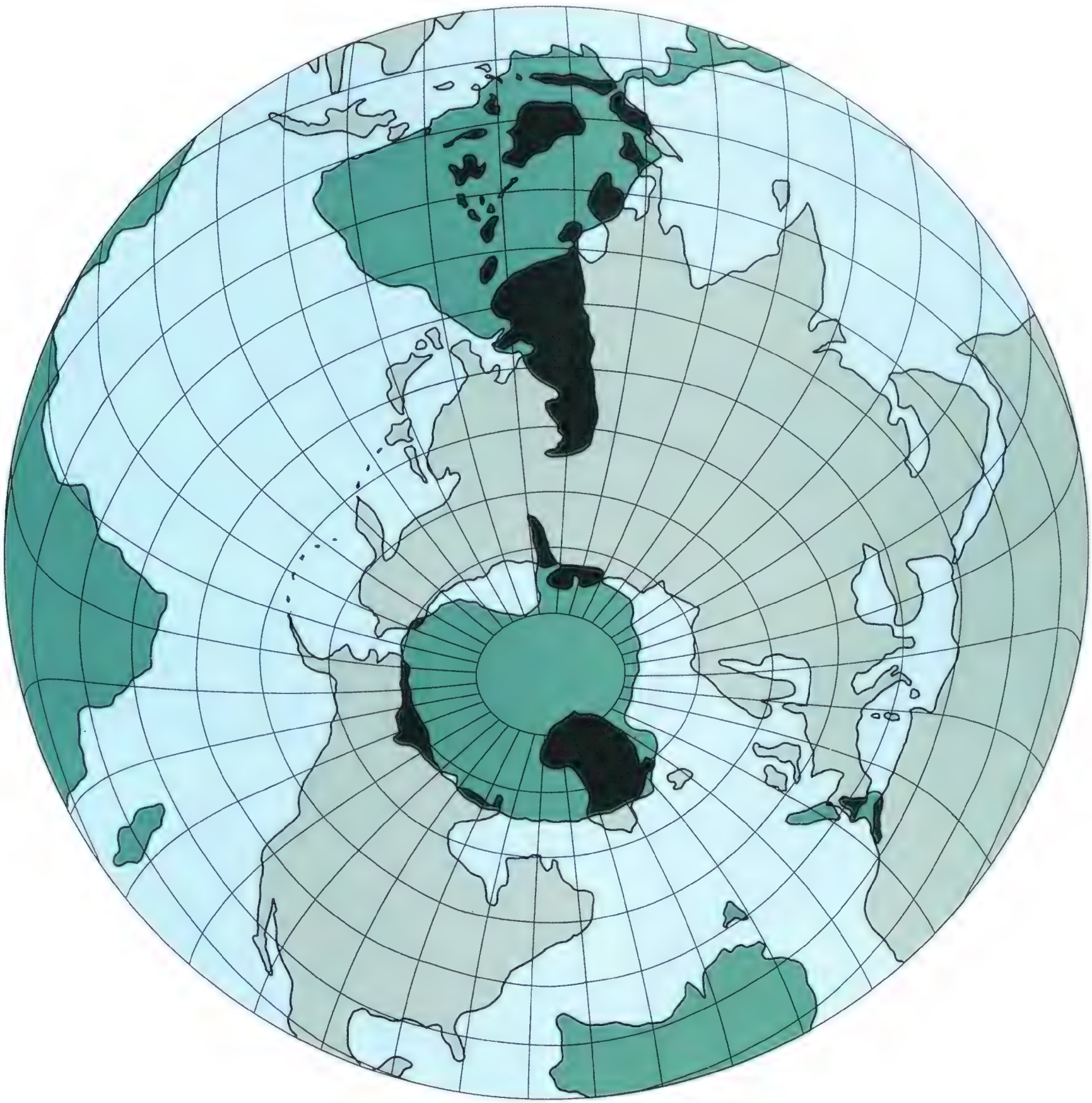
copies, you could match the edges perfectly and repeat the pattern just like decorative tiles. The endlessly repeating mural which would result would tell us that a true map of the world has no edges.

The best maps using these poles need not be neatly rectangular or square: little in nature is. The field of view of the human eye is not rectangular and makes one wonder why artists go to the trouble of filling in the corners of their canvases.

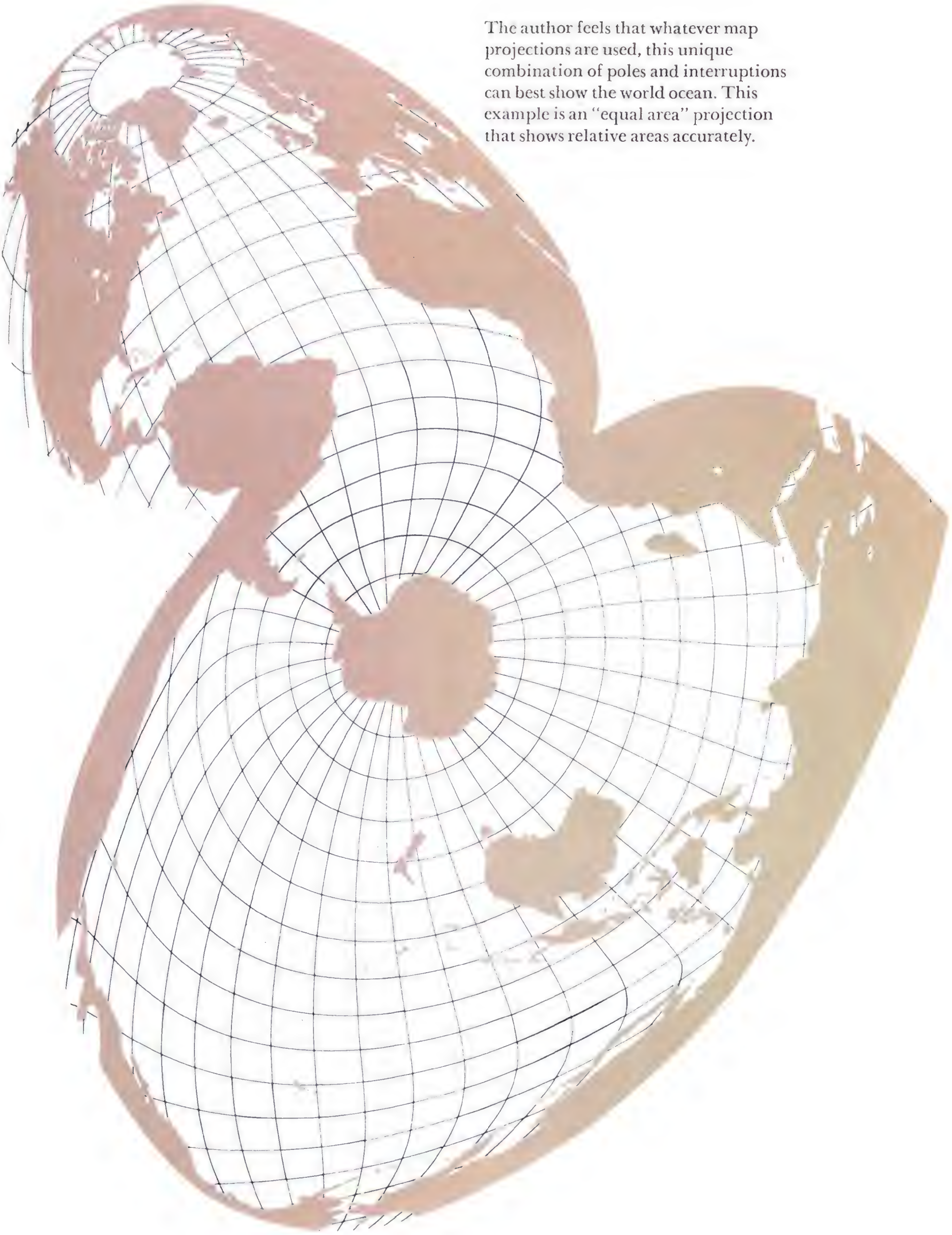
In fact, we can improve these maps if we drop the arbitrary requirement that they be square, rectangular

or any routine shape. In reality, the three oceans meet around Antarctica and stretch outward like flower petals, separated by the continental land masses. The largest ocean, the Pacific, spreads over an entire hemisphere, while the Atlantic and the Indian each occupy a quadrant; thus three-lobed maps are far more logical than routine shapes.

So if we make another cut through the land mass of Africa, we can flatten the three oceans with less distortion and see them in proper perspective. The result (p. 122), for global purposes, is doubtless the best representation—mathematically and esthetically—of the world ocean. Its shape may remind the viewer more of a crazy tulip than a conventional map, but it shows something important about our planet that our schoolroom maps do not: our world is an ocean, only interrupted here and there by the land on which we happen to live.



Here the globe has been cut in half and maps of the resulting hemispheres (light and medium shades) superimposed. The land areas that overlap (very dark areas) are the only antipodes that occur on land.



The author feels that whatever map projections are used, this unique combination of poles and interruptions can best show the world ocean. This example is an "equal area" projection that shows relative areas accurately.

BECAUSE the delicate bouquet of this young wine foretells its noble future, our winemaker can patiently and carefully guide the promising youth of our Johannisberg Riesling.
Every step we take, we take with care because THE WINE REMEMBERS

THE WINERY OF
ERNEST & JULIO
GALLO

Ernest & Julio Gallo, Modesto, CA

Students pull together to haul log out of woods at rural school, where everyone majors in hard work.

By Richard Wolkomir

In a private school, pupils pay to suffer

The courses are in livestock and wildlife, but what Sterling students learn in this Vermont ordeal is to depend on themselves

On her seventh day in school, Cheryl Warren decided to drop out. She was standing in a Vermont forest, in an October downpour, staring at a 700-pound log.

A teacher was tying a rope to the log. In a moment, Cheryl and a dozen of her new classmates at the Sterling Institute in Craftsbury Common would be expected to pick up the rope and haul the log out of the woods. Like Clydesdales.

Her wool shirt and jeans sodden in the rain, Cheryl shivered, miserably sniffing wet earth and newly cut spruce. Off in the woods, where other student teams were working, chain saws snarled, severed trees cracked and thudded. How could they budge this monster log? Cheryl knew that Sterling was too much for her: this was only the beginning. She would have to give up and go back home to Granby, Massachusetts.

Teacher Steve Wright, a biologist, finished knotting the rope and stood up, rain dripping from his yellow hard hat onto his yellow poncho. A leathery, bearded man with a plug of chewing tobacco in one cheek, he regarded the students with an amused eye.

"Now, don't be ashamed," he said in the drawl of his native Georgia. "These baby logs are just to get the knack. You'll be skidding the big ones in no time!"

Sterling Institute is a phenomenon of the Seventies. From split-levels and condominiums nationwide, youths come here to develop tough hides. They fork out dinner to Holsteins on subzero January evenings, cut timber when biting black flies smog the air, and raise capering lambs into sheep for slaughter. They crawl along ropes strung between treetops. They wade waist-deep in mountain snow for four freezing days, their comfort and safety in their own hands and heads.

Cheryl Warren, in front, and Zannah Crowe practice their canoe technique on a pond near the school.

They can earn a year's college credits. But they also earn—if they are diligent—a firmer sense of self and of their relationship to nature and society. And they may tap deep pools of self-confidence and resourcefulness they never knew were in them.

"Let's haul," Wright told Cheryl Warren's team as they eyed their huge spruce log.

Awkwardly, the students lined up, gripped the rope and tugged. Nothing happened. One boy slipped and fell to both knees in the mud. Wiping rain from their eyes, the students tried again. It was no use. The log didn't move.

"We get them working right off, and when it's grubby like this, that's perfect," Wright told a visitor, as they watched the students flounder in the mud. "Seventy percent of our students are urban or suburban, and most have this idea of how they want careers milking cows or cutting lumber. They'll discover some of the realities today."

Pulling half-heartedly and out of sync, the students were generating insufficient oomph. One girl, with no notion of how to work with a group, just stood aside, looking on unhappily.

Turning to the students, Wright said: "One thing you're learning now is what demands you'll be making on the draft horses later. This is the first time you're working together as a team. Let's get organized."

Hesitantly, one boy aligned the team and counted down for a united tug: the log lurched. With a triumphant whoop, the students slogged and slid down the muddy trail, the log snaking behind them.

Smiling now, the students straggled back, spattered

"Final exam" comes in midwinter when students spend four days on a cross-country camping expedition.

Photographs by Richard Howard

Dave Jackson clips a sheep's hoof, one of many skills taught in livestock farming course of studies.

Peter Halvorsen takes a break in the rain and mud while learning to log during first week of school.

with mud. One grinning boy, coated from eyebrows to workboots, reported: "I fell in."

"Oh, Peter, what will your mother think?" Wright asked, as he hitched up the next log. He watched the students slipping, sliding and shouting as they hauled it away. Cheryl Warren was thinking that—just maybe—she would make it. But from his ten years with Sterling, Steve Wright knew that not all students would receive their diplomas in May.

Of the previous year's class of 75 students, 70 graduated. Four youths were expelled—one boy because he wouldn't work, three others because they broke Sterling's strict rules on drugs, drink and disruption. A South Dakota girl, who had thought she wanted to work with horses, dropped out.

Throughout the Sixties, Sterling was a standard preparatory school, grooming well-to-do young men for enrollment in Ivy League universities. Even in winter, with the school's white clapboard buildings windowsill-deep in snow, boys trudged to Latin and political science classes neatly togged in coats and ties.

But sagging prep school enrollments nationwide forced Sterling to look hard at the incongruity of uniforms in a mountain hamlet of dairy farmers and lumberjacks. Could Craftsbury Common's farms and forests become, somehow, Sterling's curriculum?

"We knew they could," says the school's lean, mustachioed president, 34-year-old Bill Manning. "For one thing, ecology, nature, the out-of-doors—these were becoming magic words for young people. And at Sterling we already had an established program in outdoor survival training to build on."

In the spring of 1973, the school graduated its last prep school class. In the autumn of 1974, it reopened as something altogether new—a school where everyone majors in the work ethic.

Sterling calls its program "The Grassroots Project in Vermont." Students must choose between becoming "aggies," specializing in livestock farming, or "woodchucks," specializing in wild area services.

Why do students come?

"Sterling gives me a chance to find out if outdoor

The author, who lives in Vermont, described New England Yankees in the July 1974 SMITHSONIAN, *but now writes mainly on science, current events.*

A close look at George Wythe's house in Williamsburg tells you that a lefthanded bricklayer was on the job.

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COLONIAL Williamsburg
WILLIAMSBURG, VIRGINIA

"Aggies" direct horse drawing a log across campus where all prep school students once wore coats and ties. The school graduated its last traditional class in 1973, reopened in its new form the following year.

work is what I really want," mused Anne Hicks of Kansas City, Missouri, as she ate homemade vegetable soup in the school's cafeteria.

In winter comes the Expedition: four days' trekking through the Green Mountains in December, in the deep snow, when the temperatures are below zero. It mesmerizes students. Will they master the woodsman's skills they need? Will they freeze? Will they break down? All through the autumn, the winter ordeal looms. In every class, any morsel of data could prove to be vital Out There, keeping them warm, keeping them safe. Early in October, for instance, Wright hands out various types of axes for the students to examine.

He tells them that in every class he will check their ax blades for sharpness, the heads for tightness. He tells them how to make a jar-top hilt for their files, so that a slip while they sharpen their axes won't gash their hands. He tells them to make sturdy sheaths.

One December day a platoon of woodchucks is chain-sawing dead and fallen trees, while aggies skid out the logs with draft horses. Wearing snowshoes they spent hours making themselves, the students labor deftly, oblivious to the near-zero cold. Are they ready for the Winter Expedition? Andy Fosmire of Palmyra, New York, leans against a maple's trunk and thinks.

"Some of us are looking forward to it, some are indifferent, some are scared, some are in awe," he says.

Suddenly, it's Expedition Eve.

Outside, it's 35 degrees and drizzling. But Wright tells the students: "This is the 16th time we've done this as an institution and we haven't lost anyone yet. However, weather like this is usually followed by a drastic change, so don't expect it to be 40 degrees."

The next morning it's 25 degrees. As always, aggies start the day at the barn. Horses, cows, goats, chickens, sheep and hogs must be fed. It's still nighttime black as the students and virtually all of the faculty members rumble northward in their buses through the tiny hamlet of Irasburg.

Twenty miles north of Craftsbury, beside a wind-

swept field slanting up to mountains, the buses halt. From here the students and teachers will hike up into the hills, then navigate back along the ridge, making about five miles a day, until they reach Craftsbury. All directions, all decisions will be up to the students.

With their 40-pound packs and their bulky parkas, the hikers seem enlarged in the soft dawn light, their line stretching a quarter-mile down the ice-coated dirt road. Silently, they file across the field, a light snowfall fading the bright blues, greens and reds of their packs and parkas. The last of them disappears into the woods. They're on their way.

Back at the school, staff members and faculty spouses anxiously watch the thermometer. Each day the temperature drops. By the third day, the radio is reporting that the temperature, with wind chill factor, is the equivalent of 30 degrees below zero.

The next afternoon a welcoming party, including Manning's beagle, Chester, gathers at the hillside where the students should appear. For half an hour all is still. Then they hear faint shouts. Chester bays happily. The noise comes closer, a cacophony of shouts and hollers, and the first hikers top the crest.

Whooping, the army crosses the common, double-time. A weary-looking Wright stands by the sign that says Sterling Institute: each student in turn slaps the sign and shakes his hand. Someone cries, "We made it!"

Later that afternoon, in his dormitory room, Andy Fosmire says: "Sunday night my tentmate and I could not get our fire going and I didn't care if I died. That night my canteen froze and burst, and the second night my sleeping bag froze from condensed breath. It makes you appreciate these dorms.

"Usually we got up at six, and it was cold when you unzipped your sleeping bag," he adds. "Then it was the basic routine—hike, eat and suffer."

By late April, patches of cold, wet earth dot the northern New England snowfields. As they lead the

Students and faculty members pass a symbol of Vermont—itself a symbol of rugged independence—as they march in from their winter camping exercise. Said one: "It's the most worthwhile thing I've done."

big Belgian draft horses—Red and Bonny—out of the barn for exercise, or canoe the white water of Maine's St. John River, studying firsthand the Dickey-Lincoln Dam controversy, students pause to ponder. Graduation is coming. What has Sterling meant to them?

"For me, everything came together on the Winter Expedition. I learned it's not so much equipment that matters as keeping your internal nuts and bolts tightened," says Dave Jackson of Lexington, Massachusetts.

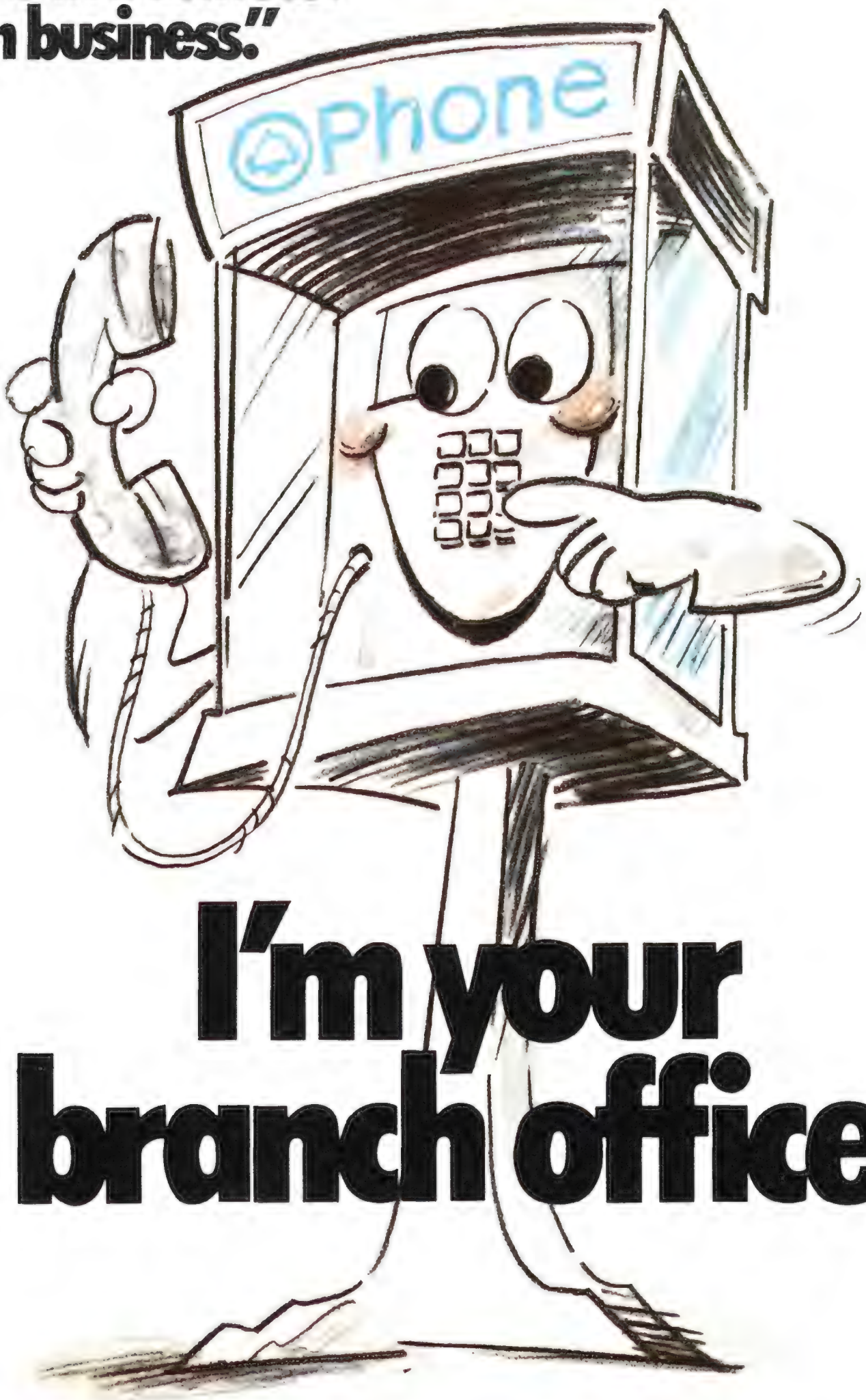
Not everyone graduated: several students were expelled once again. But no one dropped out.

"That first week, when we skidded those big logs in the rain, I was wet, cold, sure I'd never learn to swing an ax and ready to quit," says Cheryl Warren. "Now, what worried me then seems incredibly trivial. I have more confidence than I ever had before."

This past summer Cheryl and several of her classmates went to work at a national forest in Idaho. Others found jobs at farms and forests across the country. Most will go on to college eventually. Wherever they go, they wear their Sterling T-shirts, green with white letters: "Grassroots—It makes you rugged!"

Tracy Becker and Peggy Schauffler embrace at the end of their year. School's goal is to build confidence.

"You're in business?
I'm in business."



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Bell System

This Gothic Revival walnut armchair is one of 18 designed by architect James Renwick jr. for Regents' Room, Smithsonian castle (background).

Museum of History and Technology lent objects relating to Teddy Roosevelt, Wendell Willkie, Lyndon Johnson, Richard Nixon, Barry Goldwater.

By Sarah Booth Conroy

Smithsonian sampler is seen in New York

The Cooper-Hewitt brought together, from Institution's Washington storerooms, a thousand objects for a mammoth show

Hidden inside the Smithsonian Institution are chambers and chambers of treasures. Still, fewer than three million of them can be shown to the public at any one time. The other 75 million objects are necessarily preserved out of public view. The count is that of Philip Leslie, the Smithsonian's registrar. These 75 million objects, the study collections, are a museum-within-a-museum, a vast laboratory for the study of nature and Man.

From all these private places, the Cooper-Hewitt Museum, the Smithsonian's New York outpost and one of the world's outstanding museums of design and decorative arts, has organized the first major Institution exhibit outside of Washington. More than a thousand objects, most of them rarely on view, some never before seen in public, will cover all three gallery floors through the end of the year. Lisa Taylor, director of the Cooper-Hewitt, is organizer of the show. It is so large it had to be installed and opened in sections.

Walking into the Cooper-Hewitt galleries is like stepping into the *Wunderkammer* of some scholarly nobleman of the Renaissance.

The objects are marvelously diverse, both natural and made by Man, samples of which are shown on these pages. The full show includes: gems, automobiles, stamps, dolls, china, fossils, posters, dresses, sculpture, an astronaut's suit, a military bicycle with low handlebars so soldiers could ride at attention, freeze-dried animals, slot machines, a diagrammatic phrenology head, typewriters ornamented with gilt

Permanent loan to MHT by Munson-Williams-Proctor Institute, Utica, N.Y.

Look closely in the little rectangular space below the hour 12 and you will see tiny figure in the process of striking. Watch is French, 19th century.

flowers, a brass sundial, stoneware pitchers, a big, blue eyeglass sign, works by Winslow Homer, a 19th-century Chinese shadow puppet, an 1830 rosewood flute, a red 1920s gas pump, an 1875 Webster Wagner parlor car model, a wind tunnel model shaped like an arrowhead, 19th-century diving apparatus, a 1930 Hamilton Standard propeller, a head of Buddha, African baskets, a model of the Santa Maria, twin dolls bought for two sisters in late 19th-century Paris, a Gray's Vest Camera made in 1886, a canvas-work picture made by Mrs. Theodore Roosevelt, John F. Kennedy playing cards, a brass microscope, windmills and a rhino named Patrick Moynihan (housed in an annex to the show at the Bronx Zoo).

And there is, to single out another example, a remarkable cup from the Gellatly Collection, lent by the National Collection of Fine Arts.

This cup has been dated to the reign of Jahangir, Mughal emperor of India from 1605 to 1627. According to legend his wife, Nur Jahan, thought he drank too much. She promised him the most beautiful cup in the world if he would drink only from it. For love of her—and perhaps with a touch of anticipatory avarice—he agreed. She gave him this tiny cup, weighing 475 carats, carved from a single emerald (p. 136). The emperor, we are told, drank from his emerald forever after (or at least when she was present).

These are not lifelike examples of taxidermist's skill; they are freeze-dried in vacuum chamber of a laboratory at the Museum of Natural History.

Model of Italian Macchi M-39 in collection of Air and Space Museum that won 1926 Schneider Trophy Race, Hampton Roads, Va. It averaged 246.5 m.p.h.

Photographs by Robert C. Lautman

The emerald cup is but a tiny thing compared with some of the gems lent by the National Museum of Natural History. The blue topaz seems like a vast gem pool, 2,470 carats. The stone has been irradiated by a new process to produce its deep blue color, according to Paul Desautels, the museum's gems and minerals curator. It would seem enormous in any other company. A light yellow-green topaz nearby is 12,500 carats; it was polished and faceted in Idar-Oberstein, West Germany, a major center of lapidary arts.

The world's largest cut gem of aquamarine, weighing 911 carats, is a clean and crisp blue. And a diamond, gold and platinum brooch, which reminds one of a pomegranate, was a winner in the 1975 Diamonds International Awards. It shows what good modern jewelry design can be. Martha Ann Gilchrist of Dallas was the designer.

An Italian reliquary from the Gellatly Collection, made in the 18th century to hold relics of saints, depicts the Resurrection of Christ (p. 138). The whole shrine is only 15 inches high and 22 inches wide.

Among the art works loaned by the Hirshhorn Museum and Sculpture Garden are paintings and sculpture by Fairfield Porter, Kenneth Noland, Auguste Rodin and Adolph Gottlieb (represented here by a painted metal sculpture—opposite).

The ingenuity and beauty of the watches from the Museum of History and Technology are enough to make you forget the time, said Mary McDonough, who helped collect the History and Technology objects.

A bug watch opens and closes its wings. The automaton watches are like the great timepieces in the German clock towers, but on a miniature scale. And there is an early 19th-century watch by Breguet & Sons with a minute figure which comes out every hour to strike the time (p. 133).

For the world traveler who wants to be up to the minute in every corner of the globe there's a watch that tells the time in Bombay, Peking, Singapore, Shanghai, Hong Kong and Tientsin. A watch with Hebrew characters was made in Switzerland.

The great diversity of objects recalls the old, less organized days of the Smithsonian. Less than two decades ago, in the Arts and Industries Building, opened in 1881, Lilienthal's glider and Langley's Aerodrome flew over the John Bull locomotive and Mrs. Parmelee's hansom cab, while bicycles of all kinds lined the perimeter—all stuck in a perpetual traffic jam. Crowded and congested it may have been, but the fascination was overwhelming.

All of this is called to mind by the wonderful 1912 Liberty Brush car (above). Its brass lantern-style headlights give it an intelligent look. But Don Berkebile, associate transportation curator, says it was the economy model. "It sold for $350. The Brush Runabout Company of Detroit made a fancier model from 1907

Brush was the name of the company that made it and Liberty the name of the model, produced in 1912 and notable for its one cylinder and wooden axles.

Sarah Booth Conroy is the Washington Post*'s design editor and editor of its Living in Style section.*

to 1912. The old saying about it goes 'wooden body, wooden wheels, wooden axles and wouldn't run.' That was sort of unfair. It was a puny car, only one cylinder, but more than 20,000 were sold and many of them have survived."

In the Great Hall is the 1934 Ford V-8 roadster, an elegant maroon job which gave rise to the remark, "I've got a date with a Ford V-8." Berkebile finds the Ford V-8 a breakthrough. Eight, even 16, cylinder cars had been made, but the Ford V-8 was the first in-

Hirshhorn Museum and Sculpture Garden

From Hirshhorn Museum and Sculpture Garden came Adolph Gottlieb's *Wall.* Primarily an abstract painter, he made sculptures like this in late 1960s.

The Museum of African Art sent a highly decorative, functional drum of the Ashanti people, Ghana. Such drums are used by popular entertainment bands.

expensive one. This roadster convertible has a rumble seat, a feature which didn't survive World War II.

Another period piece is a gas pump of the 1920s, painted a cheerful red. The 1885 Star Bicycle could thumb its nose at the pump. The Star "was an original American design that improved on the English high wheeler," said Berkebile. "Colonel Albert Pope in 1878 first started to produce the 'Ordinary' bicycle in the United States, based on the English high wheeler. On the high wheeler, there was no gear drive or chain and sprocket. The bike wheels came in sizes to match different lengths of legs. Because the rider sat directly over the larger front wheel, he was vulnerable to an accident appropriately termed a "header"—in which he was thrown head-first over the front of the bike. The Star Bicycle was considered safer because the high wheel was in back and the small wheel in front."

Pneumatic tires had to wait for the invention of conventional cycles, later. "They gave a lot more comfort and speed when they came into use in the late 1880s," says Berkebile. "They were invented by an Irish veterinarian for his crippled child's tricycle."

The Tom Thumb locomotive model in the transportation part of the show is particularly appropriate. It was built in 1830 by Peter Cooper, the millionaire benefactor who gave the Cooper-Hewitt half its name, to demonstrate to the directors of the B & O Railroad the practicality of the steam locomotive. However, according to John H. White, curator of transportation at the Museum of History and Technology, that was

unnecessary effort on the part of Mr. Cooper, because steam locomotives were already in commercial service in Great Britain and it was only a matter of time before they would also be adopted by U.S. railroads. He believes that this model attracts so much popular interest because people are intrigued by its name and respond to its small size.

A faster way to go is represented by the airplane models from the Smithsonian's Preservation, Restoration and Storage Facility at Silver Hill, Maryland. Among the models are racing planes such as the Travel Air Mystery Ship of the 1930s and the Italian Macchi M-39. Silver Hill has also sent an Apollo space suit and a Voyager model built on a scale of one to ten. All belong to the Air and Space Museum.

An older way to go is commemorated by the envelope carried in 1861 by Pony Express from San Francisco to New York by way of St. Joseph, Missouri. A Miami Airport dedication cover of January 9, 1929, was autographed by both Charles Lindbergh and Amelia Earhart.

The Museum of History and Technology, where the stamps come from, has also lent some political history items. A bucket carries the legend "Let's clean up with Eisenhower and Nixon." A clock shows Franklin Roosevelt at the wheel of the Ship of State. A peanut bank represents you-know-who. And a Caroline Kennedy coloring book reminds us of a Presidential daughter. Fanciest of all is a sterling silver envelope that enclosed an invitation sent to President Benjamin Harrison in 1889, requesting his presence at a celebration in honor of the centennial of George Washington's inauguration.

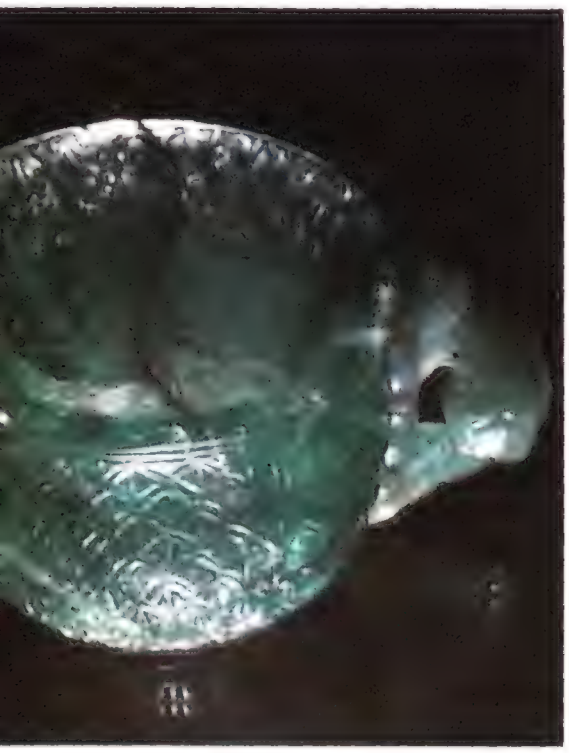
White House china marks the changes in taste. The Lincoln china by Haviland, with its purple border and eagle, seems very plain compared with the Rutherford Hayes service, which includes an oyster plate made to look like real oyster shells on sprays of seaweed.

An 1875 pair of Levi's, a striped swimming suit for a man and a bathing dress for a woman come from History and Technology's costume department. If they need to be mended, there's Martha Washington's own sewing kit.

By this time, your head may be in such a whirl of objects that you might well need help from the medicine exhibit. A homeopathic pocket drug case is shaped like a gilt-edged leather-bound book. Eighty-five miniature bottles of drugs are set into one side. Directions are on the other side. And if it doesn't work, there's the lizard rattle of a 19th-century Indian shaman.

The newest Smithsonian museum, the Museum of African Art, sent several pieces from its extensive collections. A heddle pulley for a weaver's loom came from the Senufo people of the Ivory Coast. The Bambara door lock from Mali is a figure providing symbolic protection for the granary or home. A Bozo horsehead marionette with hinged jaw is used for community entertainment and social satire. The shell of the Ashanti drum from Ghana is carved in the shape of a female figure, symbolizing the drum's role as the "mother" of the musical group.

The first structure occupied by the Smithsonian



Cup, cut from a solid emerald, measures 1⅜ by 2⁵⁄₁₆ inches.

Freer Gallery of Art

Phrenological head dates from late 19th century, when the fad was at its peak.

From the Freer Gallery comes an 8th- or early 9th-century head of Buddha.

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Institution is represented in the form of James Renwick jr.'s own model of the castle. James Goode, curator of the castle, points out that it owes its cream color to the fact that it was originally planned to be built of marble. But when the estimates came in, there was an economical switch to red Seneca sandstone from Maryland. Renwick, always adaptable, made an extra tower for the model, so the Regents could decide whether they wanted two matching low towers or one tall flag tower and another low one. The 12-story flag tower, of course, won.

The two Gothic Revival chairs are from the original set of a table and 18 chairs made for the Regents' Room. In the great fire of 1865, the table and nine chairs were lost. Queen Elizabeth II sat on the one shown (p. 132) in 1976, when it was lent to the Capitol for a state luncheon in her honor.

So many more things...

The Museum of Natural History's Paleobiology Department sent a large slab of rainbow wood, taken from the Petrified Forest in Arizona; fossil leaves from Florissant, Colorado; and a fossil *Metasequoia* or dawn redwood around 40 million years old, from British Columbia. The *Metasequoia*, according to paleobiology curator Dr. Francis Hueber, was long thought to have been extinct for about 25 million years—until it was found growing in South China in 1944 (there are several tall specimens, planted since 1964, growing on the Mall outside the Museum of Natural History).

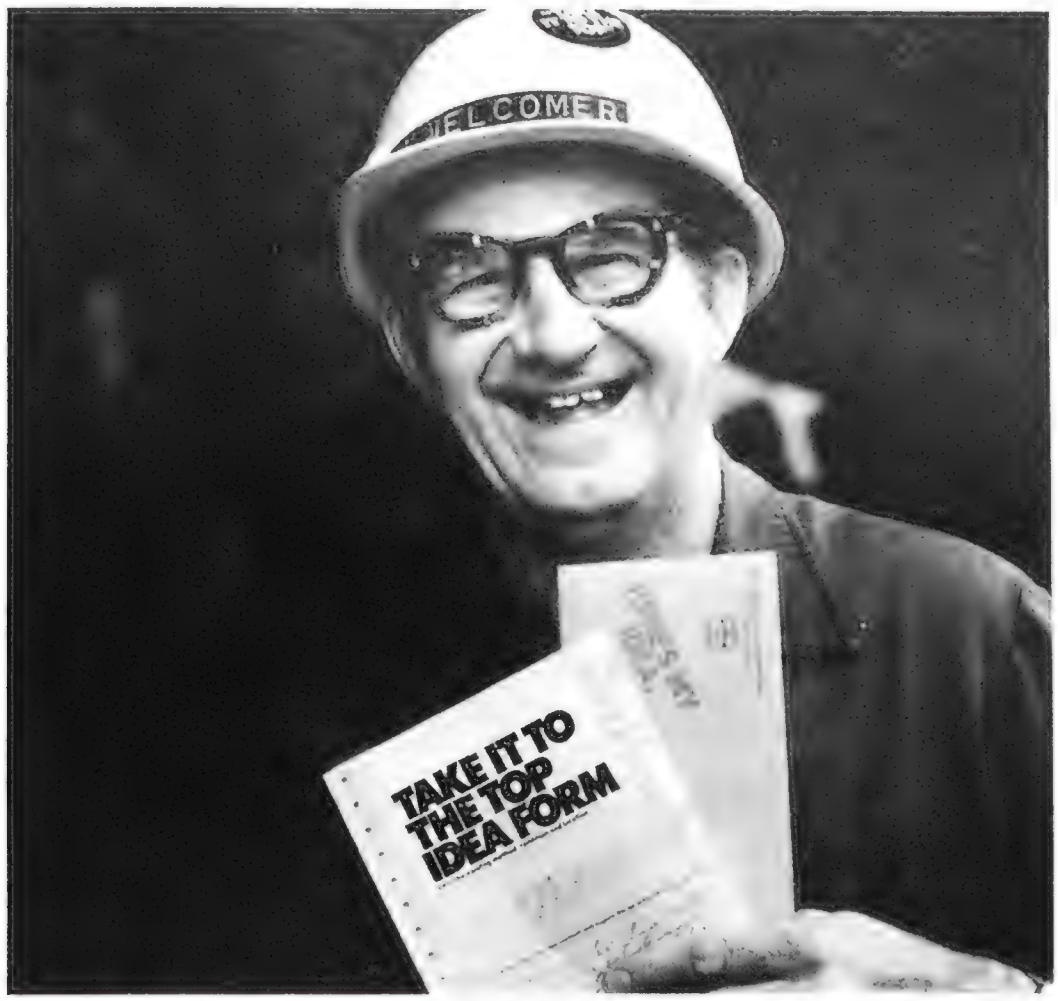
David McFadden of the Cooper-Hewitt picked out an old object from its collection that is back in style and use again. The cast-iron heating radiator, from about 1840, is shaped like an arch. Inside stands a classical woman with a drinking glass; columns, vases, rosettes, scrolls, fluted capitals, a tympanum of eagle and stars embellish it. Manufactured by Stratton & Seymour, it was once used in a New York house at 37 St. Marks Place.

How do you put all this together? Mrs. Taylor said: "We show nature as the ultimate designer, and the objects Man has made to defend and protect himself, to measure and record, to travel and play. It isn't a history of the Smithsonian, or a department by department representation; it is a sampling of treasures."

A reliquary from the National Collection of Fine Arts is adorned by six white glass figures. It contains the relics of saints. Lined with silk, it is made of intricate pleated, pressed and twisted gilt paper.

Permanent loan to Museum of History and Technology by Munson-Williams-Proctor Institute, Utica, N.Y.

We asked our employees how we could work smarter.



Harry Welcomer, who works at Bethlehem's Steelton, Pa., Plant, was awarded $5,000 for his better idea: a new, adjustable electrode for an automatic welding machine.

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Let's take it to the top in government, too

When you get right down to it, deficit spending by government is the chief engine of inflation. We need to keep government aware that unfettered spending must be brought under control—and that one way to subdue inflation is to make our tax dollars more productive. People in government can work smarter, too.

You can help

Cutting inflation down to size is everybody's business. One way you can contribute is to take your own better idea right to the top—whoever the top may be for your particular suggestion.

Your idea *can* make a difference, but only if you share it with someone who can do something about it. That someone may be President Carter... your governor...your representatives in Congress...your boss...????? Take It To The Top.

Bethlehem Working Smarter

By David Lampe

Your neighbor in the library may be a thief

Plundering maps, documents, rare volumes has become a big illegitimate business for crooked individuals and even for gangs

Illustrations by Cameron Gerlach

In his Austin shop, antiquarian bookseller Walter Reuben unwrapped the Republic of Texas and early Louisiana maps excitedly. They were fine specimens, and bargains. But he knew almost at once that he couldn't buy them—not at any price. He telephoned the colleague who had offered them on approval to explain why.

"I have reason to believe," Reuben picked his words carefully, "that these maps have been taken from the Sterling Library at Yale University."

An embarrassed silence, and then the other dealer sputtered: "Taken! You mean stolen? That's impossible! I bought them in New Orleans from a responsible person, an associate professor of English at Tulane University. Surely you don't think—?"

Reuben *did* think. If the other dealer agreed to forward the maps to the Sterling Library, Reuben would hand them back to him, no questions asked. Otherwise he'd take them straight to Austin's FBI office, for he had recognized the penciling on some of the maps as the handwriting of Thomas Streeter, a widely known collector of Americana who had died in the 1960s. Knowing that the Yale library had purchased Streeter's Texana collection in the early Sixties, Reuben doubted that any items from it would be "deacquisitioned" so soon. And on some of the maps Reuben saw Sterling Library markings that had been partly obliterated.

The Yale librarians took back their maps in some disbelief, for they hadn't suspected that the rare items were missing. The theft might have gone unnoticed for months, years or decades: such archival material, however important, is not perused every day.

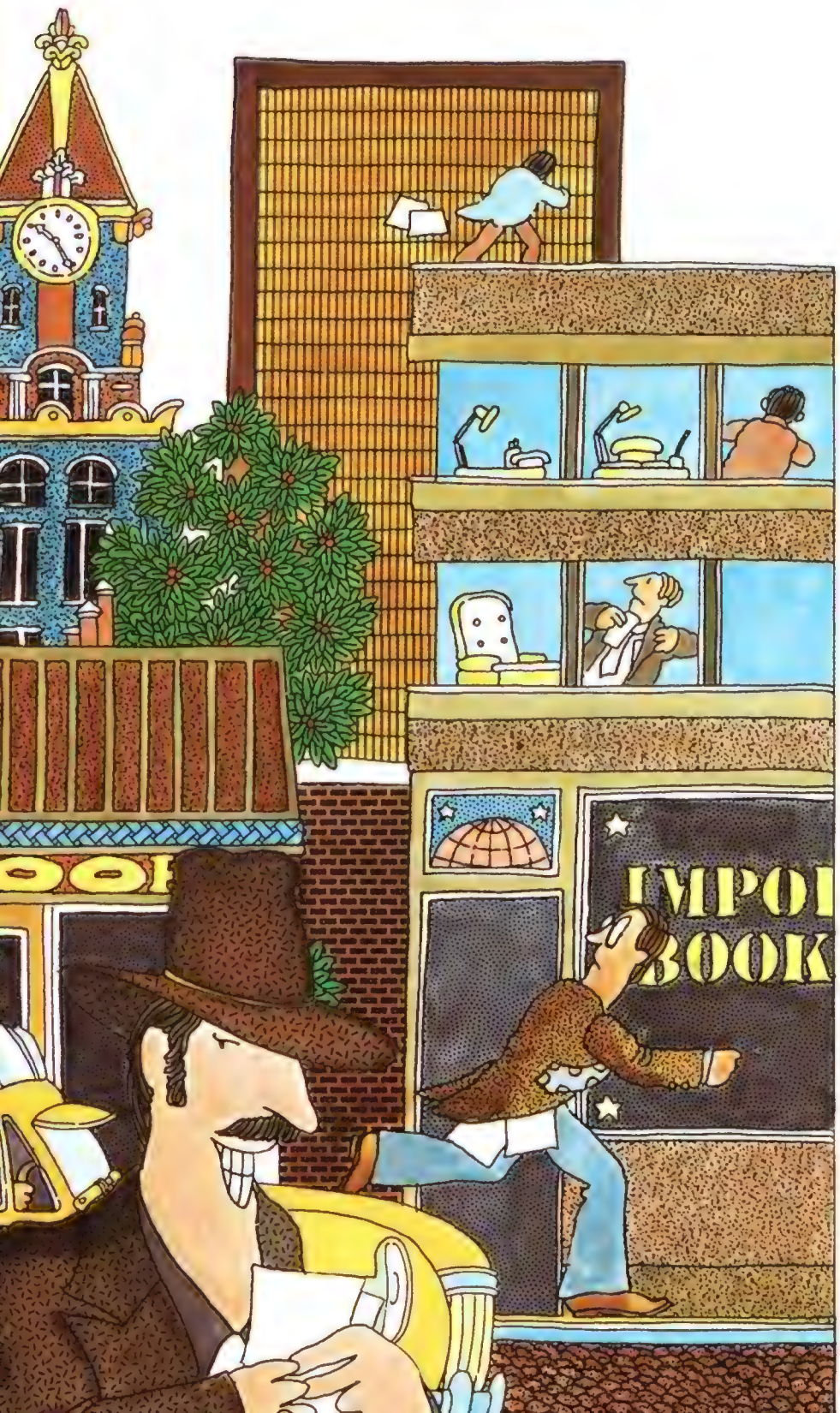
News of the Yale theft soon spread, and librarians and archivists in major research institutions across the nation nervously checked through their old call slips to see if the larcenous professor had visited them. More thefts were laid at his doorstep, and in a U.S. District Court in New Haven in November 1978 he pleaded guilty as charged. His one-year sentence, concerned people say, was a light one.

This case briefly drew attention to a problem that has bothered archivists, librarians, antiquarian booksellers and some police investigators for years. It is a problem that is growing every day, for the storehouses of our history and heritage are being plundered as never before by amateurs, professionals and sometimes by well-briefed, well-organized gangs. Such is the nature of these crimes that no one can guess how many occur each year or what the losses are.

No repository today is altogether secure, not even out-of-the-way public libraries with only a few thousand books on their shelves. "Their librarians," comments one Southern bookseller, "don't take adequate precautions to safeguard their books because they don't realize how much the values have escalated. Some purchased for pennies years ago—those low prices still penciled inside their covers—are today worth as much as $500 or $600 apiece."

Some larger, more affluent libraries do indelibly mark their rarer books. A few institutions use invisible markings. More common are inconspicuous markings that patrons can see and that act as a psychological deterrent. In the event of thefts, forewarned police and dealers can watch for these marks, which may not always deter thieves but do firmly establish ownership of books that are recovered.

Marking individual maps and documents in municipal, state, federal and private archives often is an im-



Bookshops and offices, as well as major archives,
are prey to many sticky-fingered paper plunderers.

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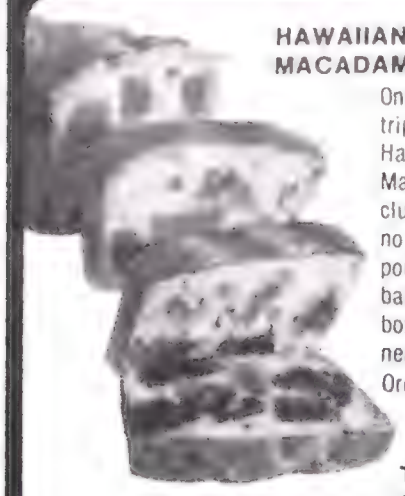

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A professor made off with a map here, a map there—and went to jail.

possible task. These institutions frequently acquire valuable materials by the crateful, even by the ton, and sometimes years pass before they can catalog them. The Library of Congress Manuscript Division alone has in its collection at least 35 million items.

Libraries and archives have always suffered thefts, but never before on the scale of the past few years. The thieves are more numerous, bolder, often more ingenious. Never in the past was there such demand for their swag. Today countless Americans collect old documents, maps, prints and books—for this is the kind of paper that seems not to depreciate. Librarians point out that genealogy, long a major industry, is now a major hobby. Perhaps bolstered by the Bicentennial and such phenomena as *Roots*, the craze has introduced into research libraries and archives many patrons who, stumbling on what they regard as family documents, simply can't resist taking them home.

Paper taking is usually indecently easy. The Tulane professor, for example, simply established his identity, stated the thrust of his research and was left alone with all the maps he asked to see. He then took one here, another there, never enough maps from any single set to arouse suspicion. He knew that the archives he was pilfering from serve up so

The author, who lives in Austin, Texas, wrote about gigantic British graffiti in the February 1973 issue.

Electric power: What about tomorrow?

You can't stockpile kilowatts for lean years.

Electric power has to be produced as needed to meet demand. And demand is expected to increase sharply over the next two decades, partly because of population growth, partly because of heavier reliance on electric power to replace gas and oil.

Our nation's present generating capacity is 540,000,000 kilowatts. The most conservative government and industry forecasts show that by 1990 electric utilities must be able to produce 300,000,000 kw more—and by the year 2000, another 200,000,000 on top of that.

Figuring the average plant's capacity at one million kw, that means up to 500 new generating stations must be built in just 20 short years.

There's a problem. A coal-fired plant started this year may take as many as 10 years to complete, a nuclear plant as many as 14. And, half the plants required aren't even under construction yet.

"Can generating plants be built faster?" Yes. *If* some of the red tape is stripped from the licensing and regulatory process.

Right now we're looking at five to seven years just for the paperwork on a million-kw coal-fired station . . . years that cost consumers dearly. Every day's delay in construction, while power plant developers struggle through a jungle of overlapping, unclear, sometimes irrational rules and regulations, adds more than $300,000 to that coal-fired plant's cost.

Regulators themselves are saying it's come to the point where about 30 percent of the average electric bill goes for regulation.

America can't afford the delays.

Consumers can't afford to pay the bill.

Energy rules and regulations can, and must, be analyzed, consolidated, and eliminated where they serve no real purpose.

A nation as utterly dependent on energy as ours must regulate its utility industries. Reasonable and orderly regulation to facilitate the achievement of objectives for the public good is in the public interest.

Regulation gone berserk is not.

A message from the nation's consumer-owned, nonprofit electric cooperatives and power districts.

America's rural electric systems

For more information, write: Dept S, National Rural Electric Cooperative Association, 1800 Mass. Ave., NW, Washington, DC 20036.

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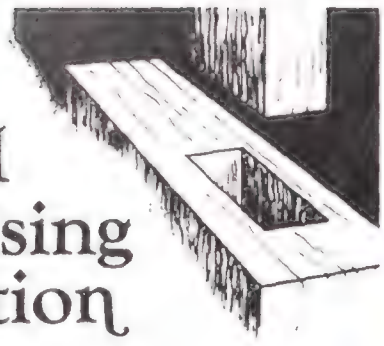

A Mortising Situation

Suppose someone told you a woodworker could be in a mortising situation if his bare face was showing? Poor punology yes, but a common furniture-making practice is to make legs and rails flush with each other by using a barefaced mortise-and-tenon joint.

Fine Woodworking magazine speaks this language to more than 100,000 readers—people seriously interested in making beautiful things out of wood. Whether you are an aspiring novice or an accomplished expert, you'll find it an especially informative magazine, with finely detailed articles about techniques and tools, materials and design. It's written by master craftsmen who share their many years of woodworking experience. And it's printed on heavy paper to withstand years of reference. All back issues are in print and indexed periodically.

If you want to become a better woodworker, write for more information about this beautifully illustrated bimonthly magazine. Better yet, send $12.00 for a one-year subscription (Visa or Master Charge accepted). If you're not pleased, we'll be happy to refund.

Fine WoodWorking

The Taunton Press
52 Church Hill Rd.
PO Box 355-TL
Newtown
Connecticut 06470

An ex-student worked unwatched, took letters with valuable signatures.

much research material each day that their staffs couldn't inventory each lot as it was returned. He also assured himself that the staffs wouldn't notice what he carried out beneath his topcoat.

Unfortunately, librarians and archivists often don't think of the material in their care as having monetary value. What scholar, after all, would guess that three happy-65th-birthday notes to Eddie Cantor—from Rudy Vallee, Mary Pickford and Lyndon Johnson, all prolific note writers—together would be worth about $100? Or that a not-very-funny, not-very-dirty joke that was penned—but not signed—by Abraham Lincoln would catalogue at $20,000? Thieves, however, guessed their value, and they have been missing for some time.

Archival items need not be inherently valuable to be worth stealing. When a former University of Texas student called on the Texas State Archives, one of the largest such institutions in America, he was allowed to work unwatched all day, walled in by file folders. The documents were humdrum—concerned with the mechanics of administrative transitions in the 20th century—but some were signed by nationally known politicians whose signatures on correspondence can have considerable value. Over a 29-day period the researcher stole more than 250 items, then moved on to California for

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The intimate Stella Maris has all the comforts of a larger ship, but is small enough to follow a yacht itinerary. (She actually has become a favorite among world travelers, who have cruised aboard the Maris to some of the most unusual places you can find—the Galapagos, the fjords of Norway, the Baltic, the Greece of antiquity.) Join us this winter in the Caribbean. See your travel agent or send for our 20-page brochure or call collect, (212) 397-6400. Sun Line Cruises, 1 Rockefeller Plaza, NY, NY 10020. Greek registry.

S-2

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Sun Line Cruises

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Reversible Goose Down Comforters

Shell is long fibre cotton loomed expressly for us in West Germany. Silky linen-like weave stays put on the bed. Comfortable the year around. **Colors:** Rose/Lt. Pink, Gold/Yellow, Green/Lt. Green, Blue/Lt. Blue.
Twin-Size Comforter (68″x86″) **$159.00** ppd.
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Goose Down Pillows

Soft, buoyant pillows comfortably support your head and neck. Shell is the same unique linen-like West German fabric used for our comforters. **Colors,** Standard-Size: Lt. Green, Yellow, Lt. Pink, Lt. Blue. King-Size: Lt. Blue.
Standard-Size Pillow (21″x27″) **$59.50** ppd.
King-Size Pillow (21″x36″) **$69.50** ppd.

Women's Fitted Goose Down Robe

A flattering style on any figure. Fabric is a machine-washable blend of polyester/cotton/nylon. This wrinkle-free traveler takes little space in your suitcase. **Colors:** Salmon Pink, Ocean Green, Sky Blue. **Sizes:** S(8-10), M(12-14), L(16-18). **Goose Down Robe $89.50** ppd.

Men's, Women's & Children's Goose Down Sox

Excellent for traveling or as bed and sleeping bag sox. Durable nylon taffeta shell. **Colors,** Men's: Taupe, Red, Winter Blue. Women's: Winter Blue, Powder Blue, Red. Children's: Red, Taupe, Winter Blue. **Sizes,** Men's: 6½-13. Women's: 5-10½. Children's: 11½-4. Men's or Women's **Goose Down Sox $12.95** ppd. Children's **Goose Down Sox $11.95** ppd.

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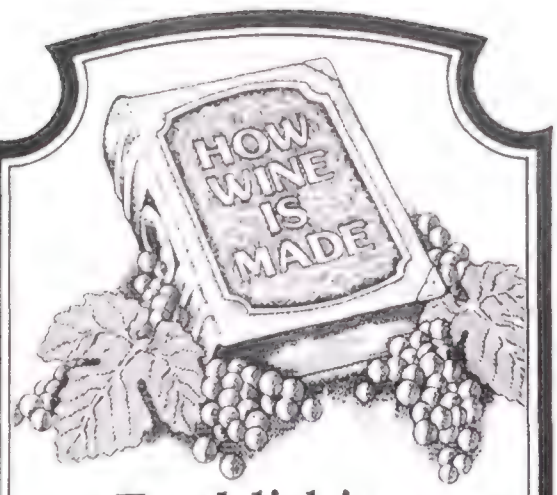
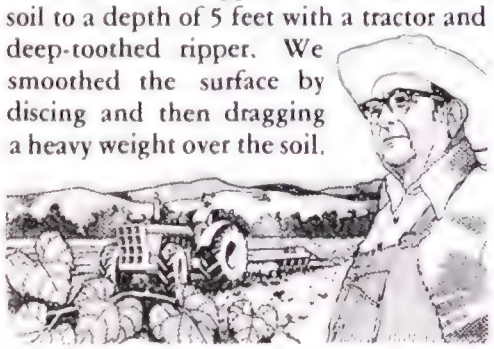


Establishing A Vineyard

6 To produce wine grapes of a truly premium nature, you must begin with a properly established vineyard. We recently added 80 acres to our Sonoma Valley vineyard, a project that involved many steps over several months.

We first cleared and contoured the land. Next we "ripped" or loosened the soil to a depth of 5 feet with a tractor and deep-toothed ripper. We smoothed the surface by discing and then dragging a heavy weight over the soil.



A surveyor laid out a grid of 96 foot squares and working within one square at a time, we laid out a row every 12 feet with vines spaced 8 feet apart. Vine locations were marked with chalk and a stake driven at each.

Vines were planted by hand, the roots carefully spread and watered before covering. The entire vine was then covered by a mound of loose soil to prevent sun damage while young. Trellis wires were strung throughout the vineyard to support future growth and finally we installed a drip irrigation system, a major project involving construction of a new reservoir.

A new vineyard such as ours is a lot of work, but if you're serious about consistent grape quality, it's worth the effort.

If you'd enjoy hearing more from the wine country, please write for our free monthly newsletter.

Sam J. Sebastiani

Sam J. Sebastiani

Sebastiani
VINEYARDS
EST. 1825

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H6

At Yale, inventive thieves spirited out library loot under cassocks.

even richer pickings, again never taking documents of conspicuous worth.

Another thief hid in a museum where $240,000 worth of Audubon prints were kept. After closing time he casually made off with them. Still another walked into a university library, stated that he represented a company that puts archival material on microfilm and was allowed to depart with scientific periodicals worth $15,000. And the unfortunate Yale library was invaded by thieves dressed as priests, who departed with priceless old maps, rare books and manuscripts under their cassocks.

Maybe a third of the thefts from libraries are—and have always been—inside jobs, sometimes the work of part-time or temporary staff but more often of long-timers, for years disgruntled at being underpaid. A large number of book thieves are students who steal volumes they can sell. Curiously, fewer people nowadays seem to steal books just for the sheer joy of possessing them.

When a well-to-do Texas oil company executive was discovered taking books

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Georgetown's superb tobacco samplers are appreciated all year round by pipe smokers of every persuasion. Each sampler contains a varied selection of our famous natural and aromatic blending accomplishments. These are hand packed in durable 2 oz. air-tight plastic jars, handsomely gift boxed. 4 sampler—$10.95 pp, 8 sampler—$20.00 pp, 12 sampler—$27.95 pp.

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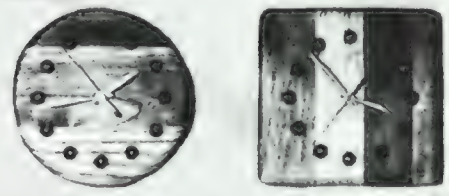

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A Fluke of Nature

A new grapefruit discovery may change your concept of fruit ——

I'm a farmer. And the story I tell you is the absolute truth, as incredible as it may seem.

It all started in a grove owned by Dr. Webb, our family doctor. One of the men who was picking fruit in the doctor's orchard came up to the Webb house holding six of the strangest grapefruit anyone had ever seen! A single branch of an ordinary grapefruit tree had produced these six unusual fruit.

These were big grapefruit, unusually big, And they had a faint red blush on their skin. When Dr. Webb sliced open the grapefruit, the fruit was a **brilliant ruby red** in color.

Doctor Webb decided to taste this strange new grapefruit. The fruit was perfect, juicy and luscious. It wasn't sour like other grapefruit either — it was naturally sweet without sugar.

For some reason, we'll never know why, nature had chosen to produce an entirely new kind of grapefruit here in our Magic Rio Grande Valley. It was incredible — men had labored for years to produce the ideal grapefruit, and had failed. But suddenly on a single branch of one tree in one grove, Mother Nature had done it all herself!

YOU CAN IMAGINE THE EXCITEMENT

From the fruit on that one branch, grove after grove now produces our own Texas Ruby Red Grapefruit. When I say, "not one man in a thousand has ever tasted this grapefruit." — you can easily understand why.

To begin with, Ruby Reds are rare. You can look for them in stores, but I doubt if you'll find one. You may find pink grapefruit, but seldom if ever do you see the genuine Ruby Reds.

So you start with the rarity of Ruby Reds, and to get to ROYAL Ruby Reds you have to get rarer yet. Only 4 to 5 percent of the entire crop will qualify as a "Royal Ruby Red."

Each Royal Ruby Red weighs a pound — or more! Each has a rich red color, flowing juices, luscious naturally sweet flavor, and the ability to stay this way for many weeks.

Why, we won't even consider harvesting a grove until I've checked out the fruit for tree-ripened maturity myself. I check for "natural sugar," low acid balance and high juice content. I check to see that the fruit is plump and meaty, and I even check to see that the skin is thin. Not only does each factor have to check out, but all the factors have to be in a proper relationship to each other before I'll harvest a grove.

And when we pick the fruit we're just as fussy. Every one of us takes a "picking ring" when we harvest. If the

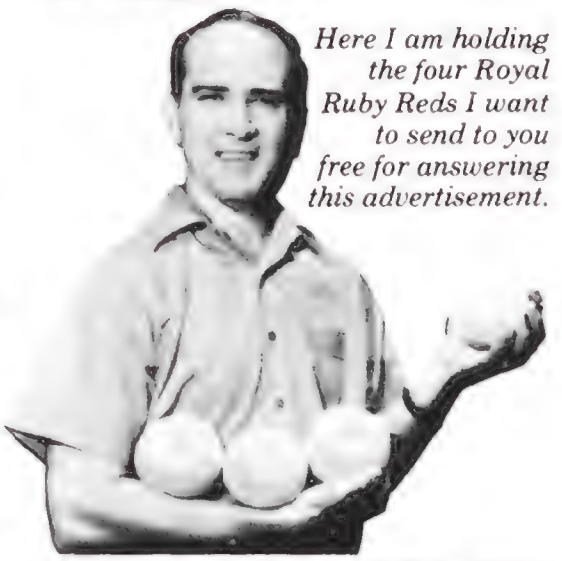
This is a picture of the actual harvest of this season's first Ruby Reds.

fruit is small enough to pass through this ring — we don't pick it! It simply isn't big enough to qualify as a Royal Ruby Red!

Even after picking there are other careful inspections each fruit must pass before I'll accept it. I size the fruit. And I grade it for beauty. Sometimes the fruit will be wind scarred. I won't accept it. Or sometimes it will have a bulge on the stem end that we call "sheep nose." I won't accept it. You can see I really mean it when I say I accept only **perfect** Royal Ruby Reds.

When I realized that the Royal Ruby Reds were the ultimate fruit, I decided to form a club and sell only to my club members. In this manner I can control my production to insure that nobody will be disappointed.

But before I ask you to join my club, I want you to sample my Royal Ruby Reds for yourself, at no cost to you whatsoever. Let me send you a box prepaid of 16 to 20 Royal Ruby Reds. Place four of them in your refrigerator until they are thoroughly cool. Then cut them in half and have your family sample this unusual fruit.



Here I am holding the four Royal Ruby Reds I want to send to you free for answering this advertisement.

You decide whether or not Royal Ruby Reds are everything I say. You determine whether or not eating a Royal Ruby Red is the fantastic taste experience I promise.

You decide. I'm confident that you and your family will want more of this superb fruit - and on a regular basis, too. If the four Royal Ruby Reds make you say "yes," then keep the remaining fruit. Otherwise return the unused fruit (at my expense) and you won't owe me a single penny.

But you are never going to know just how wonderful genuine Royal Ruby Reds are unless you place your order right quick.

This way you are sure to receive your package containing 16 or 20 Royal Ruby Reds for you and your family to sample a few days before Christmas. But since the supply is strictly limited it's important to place your order now.

SEND NO MONEY NOW

I'll put the bill for $11.98 for this first shipment on the top of the box. That's a saving of $5.00 off the regular price of $16.98 . All delivery charges are prepaid by me. Remit only after my Ruby Reds have proved themselves, otherwise you don't owe a thing.

Now suppose you do like Royal Ruby Reds — suppose you **love** them — can you be sure of getting more?

You surely can. By saying "yes" to my first shipment you have the privilege of automatically joining my Winter Fruit Club. Please be assured **you pay nothing in advance.** But each month during the winter I'll ship you a $16.98 pack of 16 to 20 orchard fresh, hand selected, hand picked Royal Ruby Reds.

Every Royal Ruby Red you receive will pass my tough tests. Each will weigh a pound or more. Safe delivery is guaranteed. This fruit is picked, packed and shipped each month, December through April.

You pay only after you have received each shipment. And you may skip or cancel any shipment, simply by telling me your wishes.

HERE'S HOW TO ORDER

Call my toll-free number below, or send your name and address to me at the address below.

Remember it obligates you to nothing, except making a taste test of the best grapefruit that has ever been grown. And this taste test is on me!

Of course, as you can well imagine, when I say supplies are limited — I'm not kidding! There's just so many club members I can accept before I must close my membership this year.

So to taste this "miracle" grapefruit, and have the opportunity to savor it each month during the growing season, be sure to place your order at no obligation today.

CALL TOLL-FREE 800 + 531-7474
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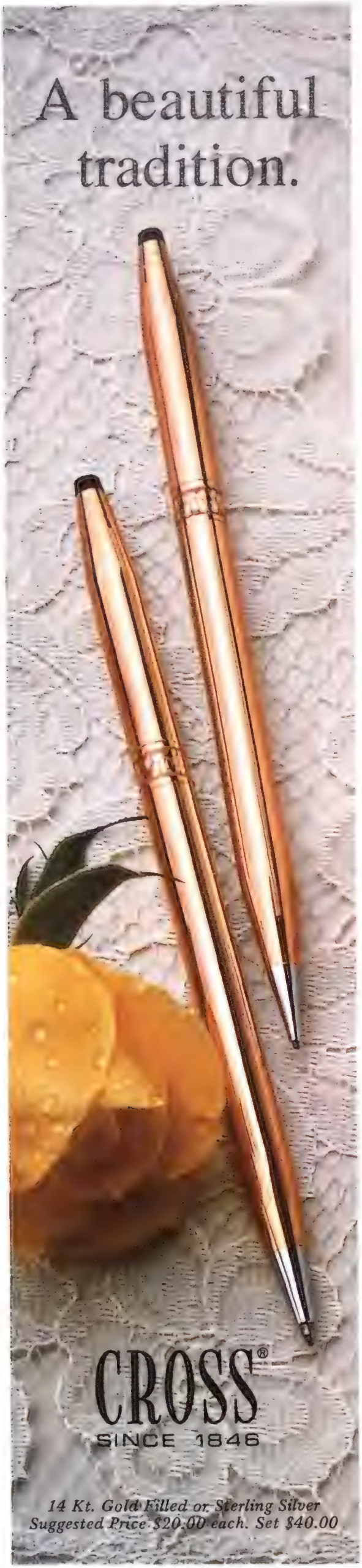
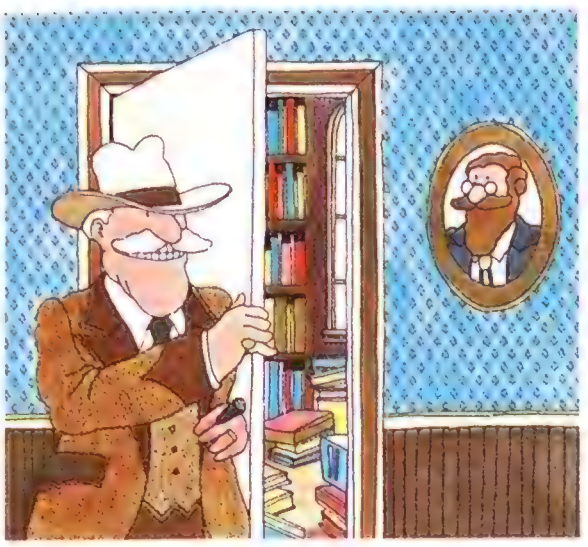


worth a mere $20 to $40 each, John Jenkins, an Austin antiquarian bookdealer and national security chairman of the Antiquarian Booksellers Association of America, was perplexed. Jenkins thought he should look into the matter before the police were involved. He called on the oil man and explained who he was. Silently, the executive led him through his house to a door in a back room. "I'd been hoping somebody would come," he sighed as he drew open the door, revealing shelves packed with stolen books.

Jenkins could distinguish between a kleptomaniac and a common thief, so he offered a deal. He would not prosecute if the oil man agreed to return the books and to seek psychiatric advice.

Jenkins and other people in the world of rare books were less sympathetic when they learned about a Baptist preacher in northeast Texas who over many years had been stealing rare books from some 108 booksellers, libraries and institutions. He had wrapped each volume separately, marked on it where he got it, then added it to his "warehouse" behind the pulpit of his church. Whenever he began running out of space, he sold some of his burgeoning stock.



A kleptomaniac oil executive was glad to have his hoard repossessed.

The price of security

Can libraries and archives be made secure against paper takers? Probably, but at a price, for security measures tend to be expensive and inconvenient. Yet most institutions could follow basic security procedures. The Manuscript and Rare Book Divisions of the Library of Congress provide lockers for visitors' overcoats, briefcases and parcels—all to be deposited before patrons are allowed into research areas. Some libraries do not let researchers take their own notebooks into the reading rooms but provide them with specially punched paper. Sheets of this paper can be put on a rod and twirled, so that anything concealed will fall out.

The Library of Congress doesn't grant stack privileges willy-nilly. Instead, research material is taken to visiting researchers, then checked carefully when it is returned. Some security-conscious libraries computerize the information on call slips. If material does disappear, the computers can name all the people who have used it.

Some of the major libraries have elaborate closed-circuit television monitoring installations, with cameras that either pan wide areas or are fixed on exits. From their monitor consoles guards can, with the flick of a switch, lock entire buildings or specific areas in them, containing intruders till police arrive. When some archives and libraries are closed, they are guarded with sensor devices that can be tuned finely enough to sound an alert when an insect flies into an area or even when a petal falls from a potted plant.

The best-guarded libraries in the country lose books. Some get on wrong shelves, then are eventually moved even farther from where they belong when new books are added. Many "lost" books have been found years later, buried behind shelves. These "losses" occur often enough to make librarians hesitant to report missing books as stolen.

Stolen books may remain out of sight for years if the thieves don't sell them. When the thieves die, their families, who in all innocence try to dispose of the loot, may be in for an unpleasant surprise. Neither federal nor state laws put statutes of limitations on such thefts. Legitimate owners can at any time retrieve stolen books, maps or documents by proving rightful ownership.

Because of the increase in book, map and document thefts, the Society of American Archivists several years ago began publishing "missing" lists. The lists' usefulness, however, was at first severely limited because they were sent only to the SAA's own members. Yet almost all rare books, maps and documents routinely reach buyers through the 500 or so members of the Antiquarian Booksellers Association of America. The ABAA eventu-

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Music has gained such an important place in my life. Not the least of the reasons why is because my Bang & Olufsen® audio system has made it so easy, so natural to have music always around.

I think it's Bang & Olufsen's attitude. Their products just seem to say that music is more important than technology, not the reverse. When I bought my system, the salesman working with me put the same thought another way. He said that Bang & Olufsen is designed for those who want to listen to music instead of manipulate it. He made a good point, and the sale.

I've always felt that quality and simplicity are naturally found together. Bang & Olufsen's strikingly handsome music cabinet seems to underscore this thought, and there is hardly a thing in my apartment that's easier to use than my Bang & Olufsen audio system. Its cordless remote control lets me start and stop my turntable, select among four pre-set FM stations, raise or lower the volume and turn my system on and off. Bang and Olufsen's loudspeakers give me music of breathtaking fidelity with every instrument alive and vibrant.

But the best part about owning Bang & Olufsen is knowing that I haven't simply added more things to my life, I've made a difference in the way I live. That's a difference I really appreciate. And from what I've learned about audio systems, it's a difference only Bang & Olufsen seems to offer.

Full-color literature is available at your Bang & Olufsen dealer or by writing Sally Matheson
Bang & Olufsen of America, Inc.
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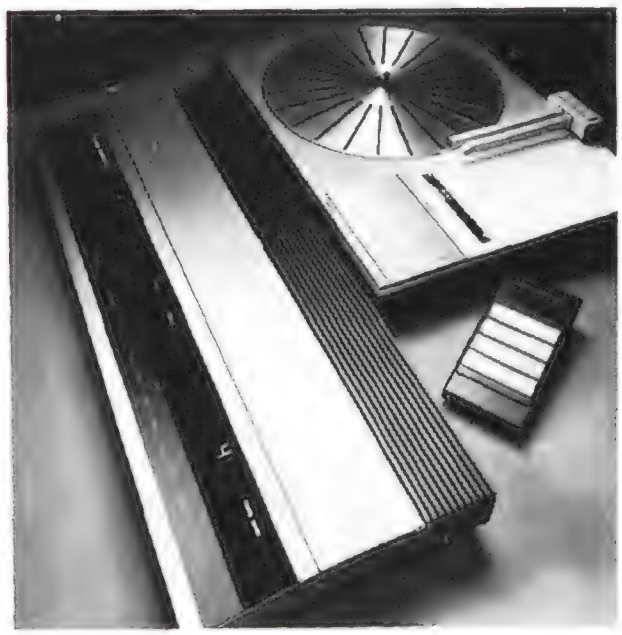

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A Texas minister carefully stored ill-gotten books behind his pulpit.

ally came to an agreement with the archivist society, and now both groups' members get the "missing" lists, as do an additional 300 manuscript dealers.

The law keeps all these dealers in a state of near paranoia, for by custom they do not act as agents but buy outright. If, say, the penciling had been erased from the Yale maps, Walter Reuben might have bought them, have listed them in all good faith in his catalog—and have lost not only the purchase price but also his advertising and handling costs. Indeed, the dealer who offered the maps to him ended up some $4,500 out of pocket.

The ABAA maintains that the laws are prejudiced against its members and allow librarians and archivists to retrieve stolen items too easily. The laws, say booksellers, enable librarians and archivists to avoid advertising their own laxness. Libraries and archives fear that publicity of thefts might make some people hesitant about placing historical material in their custody. "Some of those guys are pretty cynical," one eminent New York City map dealer complained. "The law ought to be changed, allowing any dealer who buys something in good faith and has a clear bill of sale to keep it."

The ABAA doesn't go this far. But it is trying to get the American Library Association to agree that when stolen items bought in good faith by dealers are claimed by legal owners and the dealers can't get anything back from either the thieves or their heirs, half the dealers' losses will be sustained by the rightful owners of the recovered merchandise. The dealers feel this might urge some curators and librarians to make their institutions more secure.

Booksellers and archivists agree that local police forces often don't try hard enough to find stolen books or archival material. Although the FBI is concerned about such thefts and has a special agent in Washington who coordinates investigations, no local police force in the nation employs investigators who have special training in handling such cases.

"Go, and sin no more"

The courts also tend to deal lightly with the felons. When the "researcher" who stole from the Texas State Archives had served a sentence in California for his thefts there, he was extradited to Texas. In court he said he had seen the error of his ways and was becoming a minister. The judge expressed approval and suggested that he follow the Ten Commandments, "and one commandment in particular. You know which one." Then he put the felon on probation. Everybody had a good chuckle—except the archivists and booksellers.

Given more leeway, John Jenkins thinks, American antiquarian booksellers could put a much firmer brake on thefts. "Remember, most of our buying is either from dealers or customers we know. We're not like other businessmen; only occasionally do we deal with people who just come in off the streets. In my own business we get about 50 letters a day from strangers offering to sell us things, and we're very wary of them. You have to be."

He speaks from personal experience. In 1971 a stranger called at his shop with an early Koran and an old illuminated manuscript. Not the sort of items that often turn up in Austin, Texas. Together

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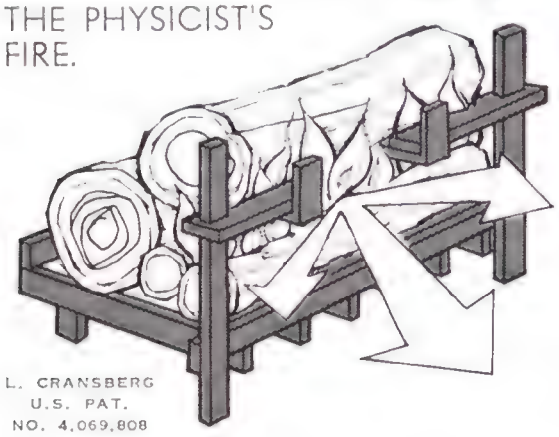

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"The Physicist's Fire . . . hot, even, slow-burning, easy to start," TIME, 12/22/75, p. 52.
"A new principle," NY TIMES, 12/29/77, C4.
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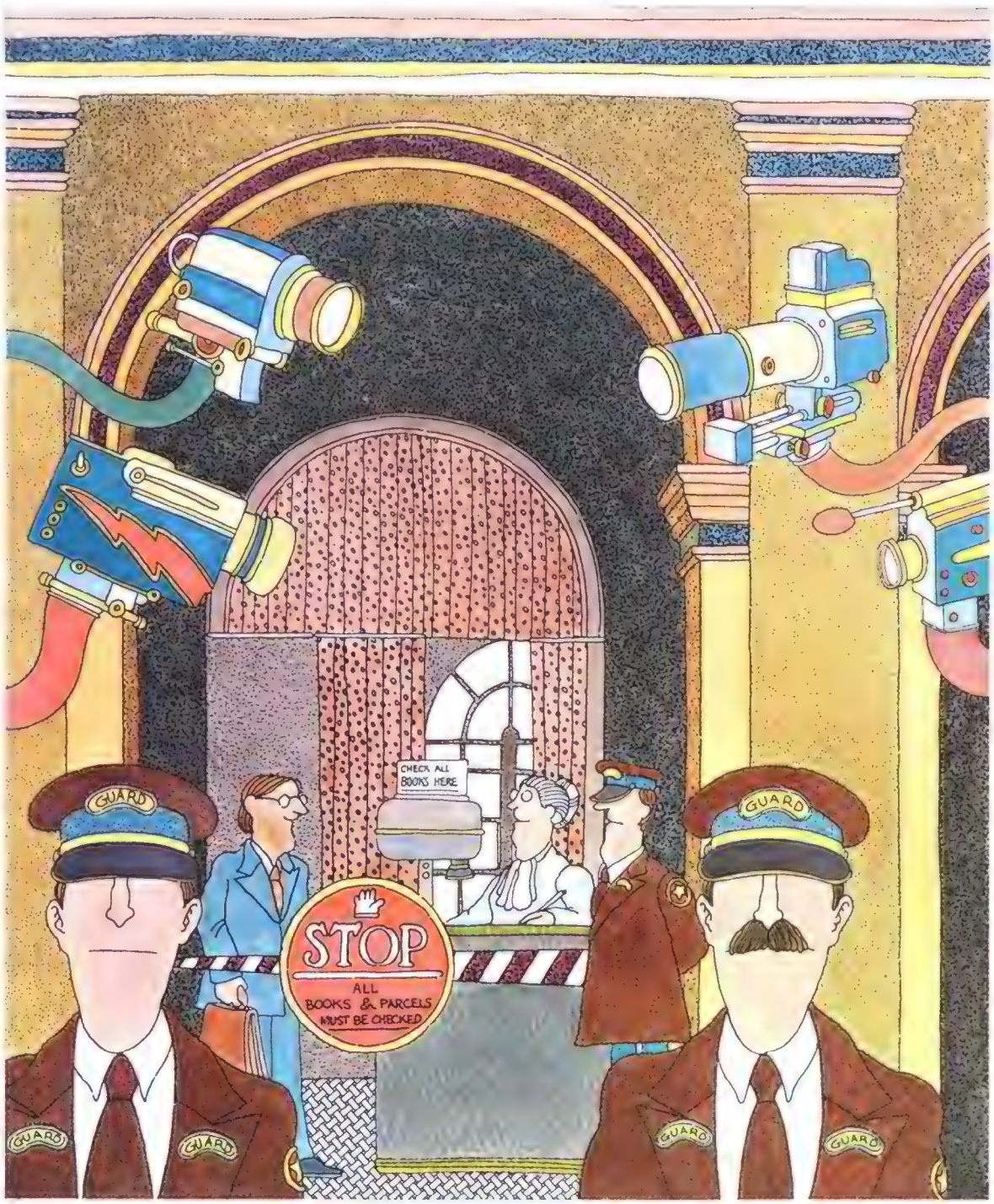

Some libraries aim closed-circuit television "eyes" at exit points of potential burglars. As in banks, guards thus can watch for thefts.

they were worth between $10,000 and $15,000. Their seller said he'd found them in his aunt's attic along with some other books and some pictures of birds "by some guy named Audubon."

"How many pictures?" Jenkins asked.

"A hundred."

Jenkins began doing mental arithmetic. Maybe a quarter of a million dollars worth of Audubons offered by a seller who didn't know what they were? Jenkins, believing that things too good to be true aren't true, said at last, "Yes, I'd be very interested in seeing all those things."

No deal was made, but the stranger left, promising, "I'll be in touch."

Later that morning, Jenkins read in a trade magazine that an early Koran had been stolen from a New York City book-dealer and an entire elephant folio of Audubon bird prints from Union College at Schenectady. So he phoned the dealer, the college and the FBI. When, a week later, the man whose aunt had the bountiful attic called back, Jenkins suggested doing a deal in New York City. "I've been planning a trip to Europe to buy some books. You'd better catch me before I spend everything I've got."

"Okay, I'll meet you at Kennedy tomorrow."

At Kennedy airport Jenkins noticed eight crew-cut men in dark business suits, one carrying a camera. Would the man waiting for him also suspect that these were federal agents?

Now, while you're feeling the pinch of inflation right down to your toes, what you need is a $100 pair of Allen Edmonds shoes.

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But to make this story ring true, we've got to make a dramatic scene change.

We take you now to the clothes closet of Mr. Sidney Brown, from Birmingham, Alabama.

Ask the man who owns thirty pairs.

Amongst his nearly three dozen pairs of Allen Edmonds shoes, Sidney Brown owns a pair that just celebrated its twelfth birthday!

Yours may not last quite that long, but it's undeniable: making shoes the way we do nets out to many years of longer wear and comfort.

And the farther a pair of shoes takes you, the better your investment is from day one.

Suffice it to say, if you wind up buying a pair of Allen Edmonds, your feet and our shoes are going to know each other for a long time.

So perhaps you ought to get better acquainted with the unique way we construct shoes.

It's not what goes into our shoes. It's what stays out.

Under normal walking conditions, what your feet need most is enough room to breathe and to not feel trapped.

Yet almost every shoe manufacturer in America ignores this fact when he designs his lasts. (A last is the wooden or plastic form over which shoes are made.)

Most shoe lasts only vaguely resemble a foot. Shoes are still built with rigid shanks and metal supports to hold the foot in place.

But an Allen Edmonds shoe is totally free of these straight-jacketing constraints.

Our lasts actually mirror your feet. So we can design shoes that are natural, flexible, buoyant—the way your feet are.

The measure of a great fitting shoe.

No doubt you've grown up believing shoe sizes are measured from heel to toe.

But in truth, your shoes are not properly fitted unless the heel of the shoe is measured to the ball-joint of your foot.

Measuring feet the precision way we do turns up some shoe sizes you wouldn't believe.

Our smallest man's shoe is a "five." Our largest is a "sixteen." And we carry 164 sizes in between.

Our widths come in such strange-sounding sizes as "AAAA." And "EEE."

But you should hear the "oohs" and "ahhs" from first-time wearers who can't believe such foot comfort.

No other shoe on the market can compete with the precision fit of an Allen Edmonds for comfort and wearability.

And that's about the size of it.

Are your shoes growing old before their time?

Every shoe manufacturer knows the place to cut corners is with materials.

But we use only the finest available.

The insoles of an Allen Edmonds shoe are always of specially tanned leather. Never synthetic. Because nothing absorbs foot moisture like real leather.

Our uppers are all calfskin, veal, shark, or borhide. And we use only the hearts.

Even the minute details, the stitching along the soles, are handled with quality in mind. We use cotton thread because it doesn't slip the way man-made thread does.

We're not slipping either.

There is perhaps one more reason why your pair of Allen Edmonds will last at least long enough to call it the best shoe buy you ever made.

You see, our shoes are made in a little Wisconsin town called Belgium.

It's a place where people aren't afraid to work at their jobs.

Many of the craftsmen who make our shoes were taught by their parents. So they've learned things others just never learn.

Like how to reject a pair of shoes for flaws even a customer wouldn't detect.

Or that productivity isn't always measured by how many shoes you can turn out in an hour. Leather must be "set." So our shoes stay on their lasts a minimum of 84 hours.

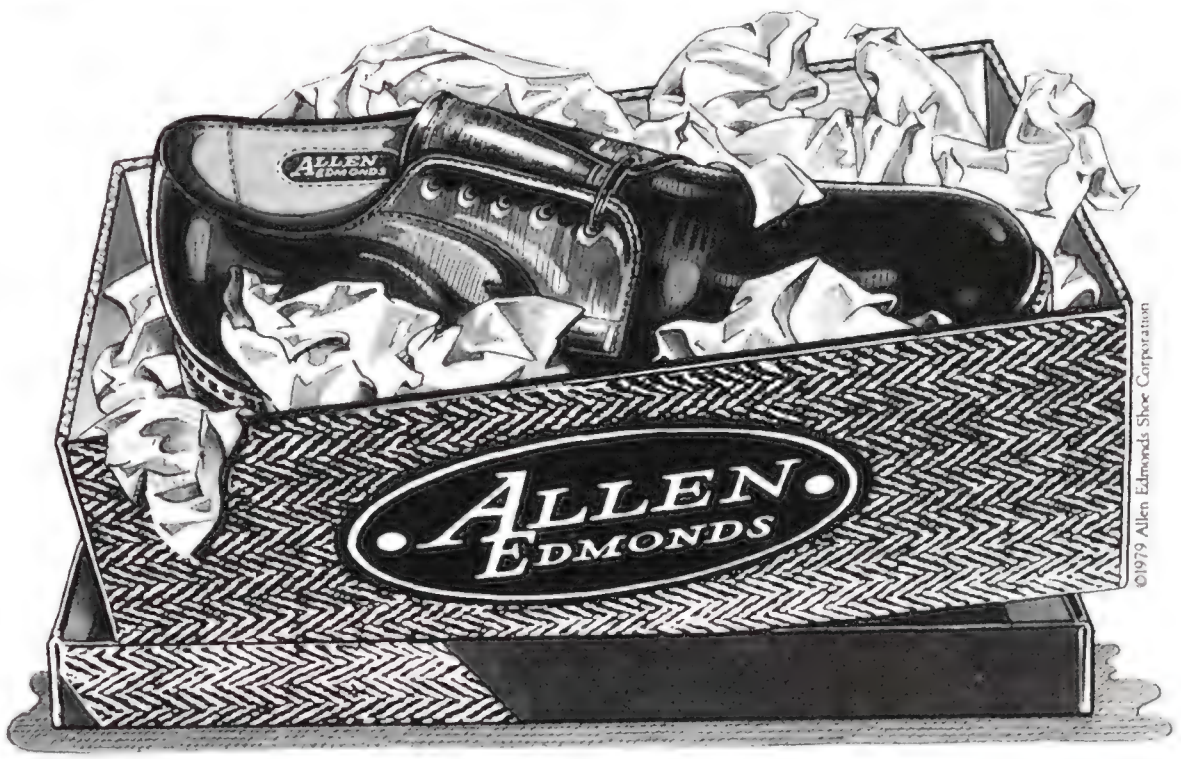
Still, we're able to turn out enough shoes, in enough fabulous styles, to fill an entire catalog.

We'll send you that catalog, and the address of your nearest dealer, if you'll write and ask us for it.

Not all our shoes will run you 100 dollars. And at a time when money is tight, that's good to know.

Oh, you'll pay a premium price for your Allen Edmonds. But once you put them on your feet we think you'll agree:

You haven't gotten squeezed.



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"As we pulled away in his car," Jenkins recalls, "he made a series of rapid U-turns, swerved behind some buildings, wandered around the maze of roads at JFK as if lost. While he watched the rearview mirror, I tried to be nonchalant, as if I noticed nothing out of the ordinary. Finally he said, 'I'm having trouble getting out of here.' "

When they finally raced out of the airport, Jenkins saw a carload of the FBI agents—racing in.

Half a mile down the Long Island Expressway the man steered into the forecourt of a run-down motel, then led Jenkins to one of the rooms.

Had the G-men, Jenkins wondered, picked up their trail? They'd given him an emergency phone number to call, but he couldn't phone. What would he say? He'd noticed a bulge in his companion's jacket and then, when the jacket flapped open, had seen a pistol butt.

Jenkins was shown the Audubon plates, spread out on the bed. All he wanted was to make a quick deal and get out. The other man seemed reluctant to get down to business. He was awaiting a phone call from his associates, he said.

Jenkins pretended to be impressed by the prints and said he had to go into the city to wire for the money.

On the way to Jenkins' hotel, his driver said, "My associates and I are interested in getting into the acquisition and sale of books. Can you tell us what types of things you're interested in buying?"

"I'm interested in everything."

"Why don't you send me a list of libraries that have collections of the type of material you like, and we'll go and do some research in them. I think through our wide circulation in the world we could come up with some collections like that to sell."

Jenkins' reply was noncommittal.

Abruptly the driver changed the subject. "Do you ever go to Las Vegas?"

Jenkins nodded.

"Next time you go, let me know. My associates are well connected out there and we'll fix you up with whatever you want. If you deal with us, we'll take good care of you."

Alone in his hotel room, Jenkins telephoned the FBI to say that he hoped to be concluding the deal at 6:30.

A few minutes after that meeting began, FBI agents burst into the room, arresting at gunpoint both Jenkins and the other man. They were taken away in separate cars, Jenkins' handcuffs were removed and he was told—for the first time—that he had been dealing with the Mafia. The organization owned the motel. Had Jenkins tried to phone the FBI from it, he was told, his call almost certainly would have been monitored. And he probably would have been killed.

The man with the "attic" merchandise, the agents explained, was known to them and had a prison record. The car from which the stolen books were eventually recovered was an escape car identified by victims of a shoot-up bank robbery.

John Jenkins was given a medal by grateful Union College—and a $2,000 reward which he returned to establish a bibliography prize. As far as he knows, the Mafia hasn't tried again to get into the antiquarian book trade. But he is not alone in feeling that our nation's libraries and archives must find the funds—and the urge—to improve their security arrangements, especially in the face of the rising values of their collections.

Crew-cut FBI men at Kennedy:
would they spot the Mafioso first, or
would *he* spot them and run out
on a deal for stolen Audubon plates?

On Photographing a Small Step

It is unearthly. The landscape underfoot. It is soft and powdery.

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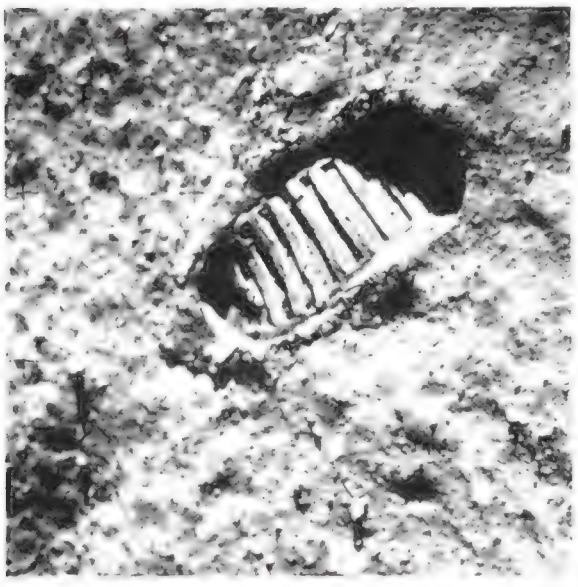
A man is taking the first pictures on the moon. He takes them with a camera that gives him startling detail. It is a Hasselblad.

It is the first of twelve taken to the moon on six landings. And it is still there today.



Photograph by Hasselblad courtesy of NASA

Hasselblads have taken tens of thousands of photographs during millions of miles of travel in space.

In all, 60 Hasselblads on 27 flights with 67 astronauts have completed 3566 orbits of earth and 363 of the moon.

Every Hasselblad proved reliable on every flight under every condition.

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The only medium format camera on earth or in space that can equal it, is another Hasselblad.

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100 Hasselblads from one

No Hasselblad can be any better than any other Hasselblad; only more suited to your purposes.

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From a man's first steps on the moon to a child's first steps on earth.

An incredible motor drive

The 500 EL/M is the only hand held medium format camera with an integrated motor unit.

So unlike cameras with optional motor drive attachments, it is built to withstand the punishing demands of motorized operation.

And the possibilities are infinite.

There is a dial set in the body that will order the camera to fire in any of five different ways.

From single shot to speeded up continuous firing at the rate of one shot every 8/10th of a second.

That means you can walk away from the camera, devoting all your concentration to your subject, while firing with a remote cable.

Plug in the intervalometer, for instance, and you can trigger the camera automatically. At any moment you want, from 2 seconds to 14 minutes.

Or trigger up to four cameras simultaneously with a command unit.

Or, fitted for remote radio control, fire from a half mile away.

And the standard film frame on a Hasselblad is 2¼ inches square, *almost 4 times the area* of a 35mm frame. So the ability to hold sharpness and contrast is phenomenal. (For actual size of film frame, see box at lower right.)

The eyes of a Hasselblad

A Hasselblad can see with any one of 22 lenses; all multi-coated (except for two special purpose lenses) in focal lengths from 30mm to 500mm with angular fields from 180 degrees to 9 degrees.

There are lenses for sports, aerial, architectural, and fashion photography. Portrait, landscape, medical, underwater and news photography. Wildlife, laboratory, industrial and child photography.

A lavish brochure on the 500 EL/M and other Hasselblad cameras is available free if you write: Braun North America, Dept. 511H 55 Cambridge Parkway, Cambridge, MA 02142—a division of The Gillette Company and exclusive marketer of Hasselblad in the U.S.

There is even the 105mm Zeiss UV-Sonnar f4.3 which can photograph the ultraviolet portion of the electromagnetic spectrum with costly quartz elements that can detect radiations unseeable by the human eye.

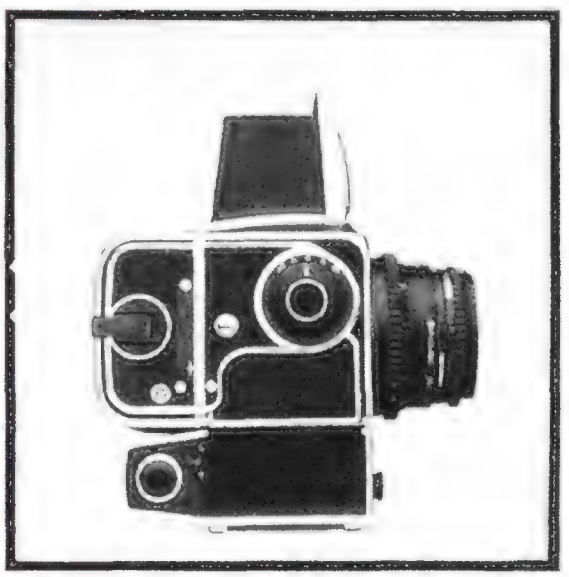
There are also lenses that adjust the aperture fully automatically as the light changes.

Even if you are not yet into these more exotic applications but simply recording travel and everyday happenings, it's nice to know that your camera produces the very best images in the medium format.

So, in effect, there is nothing you can't see with a Hasselblad. And photograph. From what is invisible to the naked eye to all that is visible in the universe.

Is it any wonder then that NASA came to Hasselblad for the camera which was to photograph space? And that top professional and serious amateur photographers still rely on Hasselblad.

HASSELBLAD®



The Motor-Drive Hasselblad 500 EL/M, made in Sweden. The standard lens is a multi-coated Zeiss Planar 80mm f/2.8T.*

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By Winfred Blevins

The world's first solar villagers are waiting to see

Photovoltaic system at a tiny Papago Reservation town works—but cost is high; also, it doesn't operate TV sets

At Schuchuli, Arizona, a banana-colored Frisbee, shining in the early light, cuts the air in front of the tiny white church. Four dark men of assorted ages and under assorted hats (baseball to cowboy) sit on a low wall in the village dance ground, enjoying a cool drink. A woman crosses behind them, hauling laundry to the domestic services building, later to be hung in the stronger light and the desert breeze. A dog yaps at the gliding Frisbee. A boy about 12 prepares for another toss, then holds it, suddenly wary as a strange car—new, expensive, big, with two Anglos inside—stops in the center of the village.

The first impression of Schuchuli, a small settlement on the Papago Reservation in southern Arizona, is of the power of the sunlight. Even at 9 o'clock it seems dazzling. By afternoon the heat it brings will be oppressive.

Now the village looks empty. The playing children, the lounging men are gone. Even the dogs have slunk off somewhere, maybe into the shade behind the adobe brick houses or under the ramadas. The only movement is among the aluminum cans (huge bins of them saved for recycling) winking back at the sun. It isn't difficult to guess that the arrival of Anglos has sent folks scurrying indoors, as surely as the midday heat will.

The old Navajo joke comes to mind: a typical family consists of two parents, four children, two grandparents, and one anthropologist. Or one Bureau of Indian Affairs official, or one reporter, or one photographer, as occasion warrants. Southwestern Indians are among the world's most gawked-at creatures, almost

Village leader David Santos has the Arizona sun on his side—perhaps the future, too.

Photographs by Ted Streshinsky

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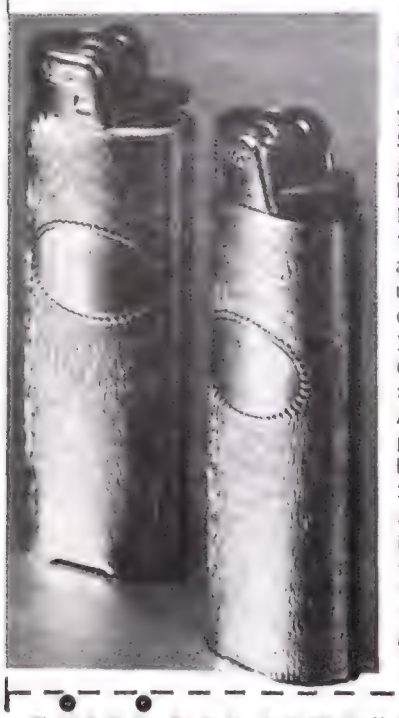

If you love your Bic but hate that plastic look, here's your answer! Snug-fit jeweler's jackets in 2 shiny bark texture tones. Elegant, and no more mix-ups in a crowd, with your initials engraved on a smooth oval! American-made, plated solid brass, set of 2—Gold-finish and silvery. For Bic ovals (not included). PRINT initials. **1445 Lighter Covers. 1 Set $4.98**

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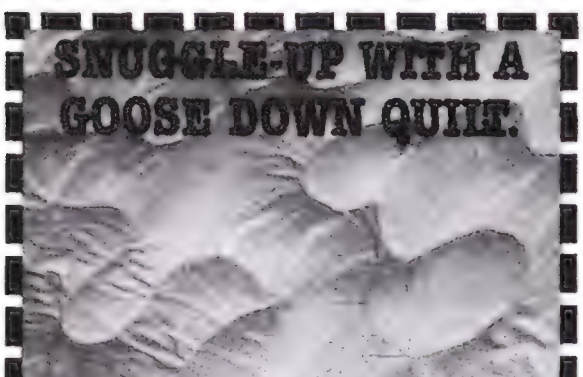

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David Santos' parents and his son Calvin sit in tiny church illuminated by fluorescent lights, powered by the experimental solar-energy system.

competing with the denizens of zoos. Being human, they don't appreciate it.

This Papago village has had more than its share of visitors since December, when it became the first village to get its power primarily from one of the most abundant natural resources—sunlight. The United States government installed an experimental photovoltaic system of power here (SMITHSONIAN, October 1977). Since then, people from Washington, D.C., New York, the Soviet Union and Switzerland—even Japanese—have come to see if the sun can really operate the lights, a water pump, the refrigerators, the washing machine and the sewing machine. We have come for the same reason, and perhaps to ask ourselves whether the Great White Father once more is doing what papa knows is best for the "poor" Indian.

Even the most benevolent of white intentions has a way of going cockeyed between wish and fulfillment. Early missionaries wanted the Plains Indians to cover their nakedness. But when the braves got hold of pants, they cut them off just below the crotch, threw the tops away, and then they wore the bottoms for leggings.

Waiting for David Santos, this area's elected representative to the tribal government, we stare at the network of poles and wires leading from the solar array to the village's two dozen buildings. The Sonoran desert all around sprouts rocky, clumpy mountains, saguaro cacti and sticky-leaved creosote bushes.

Santos is a quiet, self-contained man of middle age, sporting a prosperous belly. He is reputed to be village leader in both name and fact. He reports to the Lewis Research Center of the National Aeronautics and Space Administration at Cleveland, Ohio, and he played a key role in the decision to bring in solar electricity. The anthropologists hired to study the impact of solar electricity on the village say that the people think of it as "Dave Santos' project." According to David Santos, most people living in Papago villages welcome electricity, although some older folks disapprove. Why? "Old-timers. They like to live the old ways."

Winfred Blevins, a novelist, specializes in 19th-century Indian subjects.

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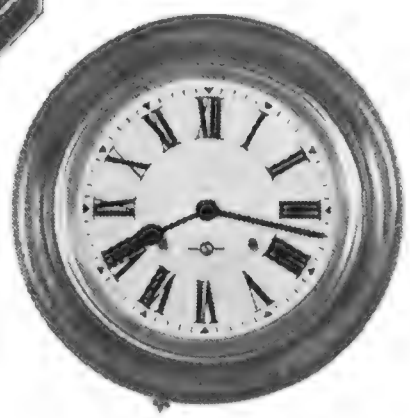

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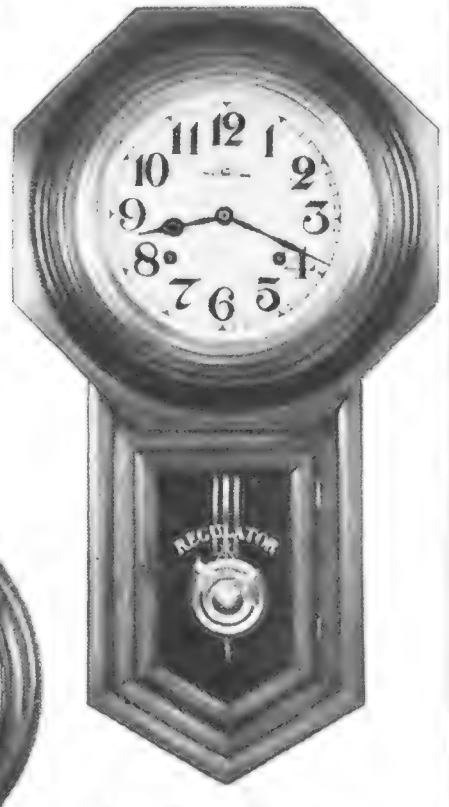

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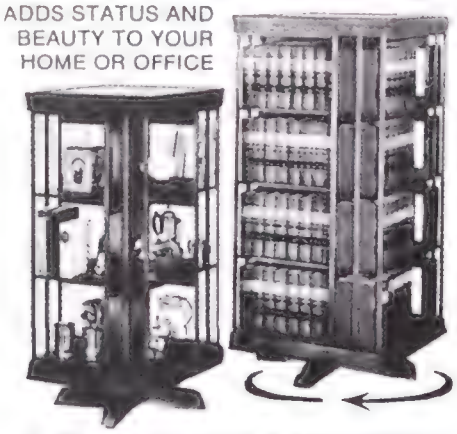

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Santos records data from the system's monitoring equipment.

Santos leads us to the heart of the system, the solar panels. On a daily basis he reads the monitoring equipment and sends regular reports to the Lewis Center, thousands of figures that indicate the health and usefulness of the system. The 24 solar panels, enclosed by a chain-link fence, are tilted toward the sun, the angle adjusted seasonally. In the panels are the photovoltaic modules that convert the sun's rays into 120-volt direct current. Nearby, in a building that houses monitoring equipment, are 53 batteries that store power for times when the sun doesn't provide. Compared to other areas, those times are few—4,000 of the year's 8,760 hours are sunlit, enabling the batteries to store current for electric lights when they are most needed, at night.

Wires run to most of the 16 households (where they operate two 20-watt fluorescent lights per building), to the small, whitewashed Catholic church, to the water pump (a principal consumer), to the feast house and to the domestic services building. A modest output from a modest system. But until last December Schuchuli had almost no electricity; a diesel engine ran the water pump, and three families had electric generators that powered television sets and a few light bulbs; the rest did without. Even the small cost of diesel fuel for the water pump was a strain on most villagers. And, like all fossil fuels, it was only going to get more scarce and expensive.

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exploratory uses of solar power. The Lewis Center had developed a stand-alone solar electric system that would supply power to villages beyond the reach of power lines. Since Schuchuli at that time didn't offer a large enough market to justify the tribal utility or a power company in bringing power lines across more desert, here was a chance to see if the system worked, and—more important—if it was economic. So far the answers seem to be yes, it does work, and maybe, just maybe, it will be economic—in a few years, and with luck.

Santos, answering questions diffidently, confirms that the system functions admirably. In the remote place for which it is designed, the photovoltaic system above all must be reliable. Neither parts nor maintenance services will be easily available. Santos says maintenance is minimal. In spite of a brief shutdown caused by a minor problem with a meter relay, the solar electricity is more reliable than utility power—it has less outage time. That's the good news.

The bad news is the cost. The Lewis Center says that Schuchuli's small amount of electricity will cost $1.76 per kilowatt-hour over the anticipated 20-year life of the system. Engineers hope that a similar system installed in 1986 would cost as little as 47 cents per kwh. (The entire cost of the Schuchuli project was a third of a million dollars, but two-thirds of that was for nonrecurring and experiment-related work that need not be repeated elsewhere.)

Yet the two principal alternatives for

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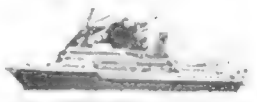

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bringing electricity to a rural area like Schuchuli—extension of power lines and diesel-generated electricity—also are relatively expensive. Lewis Research Center has estimated that the cost of bringing power lines to Schuchuli would be $1.55 to $1.91 per kwh; diesel-generated electricity would cost $1.73 per kwh. And these costs will rise with the cost of fuel.

If, in remote rural areas, the cost of solar electricity compares favorably with that of conventional sources, in urban areas it does not. Many utilities in the United States supply electricity to nonrural areas for less than a nickel per kwh.

So a paradox: solar electricity today makes sense primarily for the world's villages—some three million of them—beyond the reach of power lines. Mostly these villages have subsistence economies, and cannot now afford electricity from any source. Yet even a small amount of electric power conceivably could enable such a village to develop its economy.

Will someone step in and give villages solar electricity, which would contribute to the hoped-for market demand? Maybe; perhaps some governments will. (The government of Saudi Arabia is planning to supply solar electricity to one village. The government of India is interested in solar electricity to drive water pumps in some of its remote villages.) Right now, although photovoltaic electricity is expensive indeed, a significantly lowered price is predicated on major improvements in production and technology, im-

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provements that many American energy experts feel are certainly on the way.

The people of Schuchuli, naturally, are more interested in what's happening at home than in its worldwide implications. Santos takes us to the domestic services building, where the 15 refrigerators, a washing machine and a sewing machine are installed. Do people like these appliances—do they use them?

Mostly yes, says Santos. (He doesn't seem to enjoy trading a lot of words.) The refrigerators are nice because people no longer have to spend so much money on ice for their ice chests. The washing machine is so popular that the waiting lines oblige the Santos family to drive their own laundry to the town of Ajo, 16 miles away. The sewing machine scarcely gets used. One of the reasons the women prefer to sew by hand—and women do all the sewing here—is that they can socialize with their families while patching pants. They don't like sitting alone in the domestic services building.

A young woman comes into the building with a baby and a load of washing. She's genuinely beautiful—a broad face with imperial features. Does she like the refrigerator, the washer? A shy smile, a shrug, but no words. Will she let us take her picture? A broad smile, and a shake of the head. Santos has politely declined to urge any villagers to answer our questions or to let us photograph them. Such things are intrusions and impertinences,

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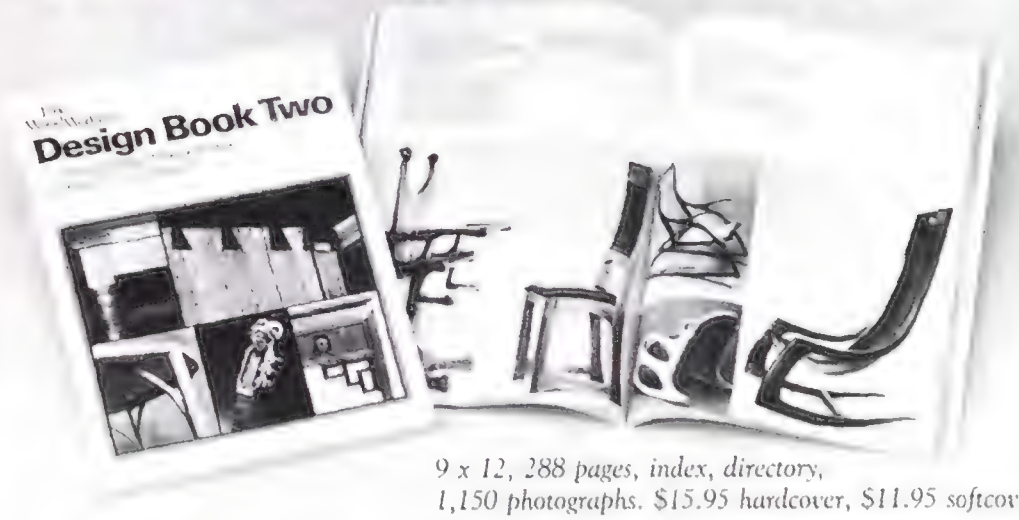

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Washer, sewing machine and 15 refrigerators are in this building.

after all. As leader, he must suffer these minor indignities—but not everybody.

Another woman comes in and opens a refrigerator. She suppresses a giggle when we ask to see what she keeps inside, then opens the door wide. Almost empty. Santos opens his own box. Again almost empty. Yet six of the refrigerators aren't working, and families are doubled up in these tiny boxes. "The boxes are good to have," says Santos. "One woman who has diabetes keeps her insulin cold that way." Later we get a clue: one of Santos' daughters takes a bottle of Pepsi from a cloth-covered kitchen cupboard and drinks it warm. Well, the English like warm beer, don't they?

Two of the Anglos closest to the project —Donald Bahr and Billy Garrett, anthropologists from Arizona State University at Tempe—think that the village-wide reception is lukewarm, or at most low-key. "To date the community has experienced the project primarily as something brought to it," wrote Bahr and Garrett in their first report on the photovoltaic project's impact on the village. "The residents did not have to reach out for it nor . . . have they had to manage it through overt collective action. . . . When asked in March how they felt about the project, the most common answer was, 'all right.' "

To try to take some of the mystery out of the system (and to raise village consciousness and pride in this "first"), Bahr wrote an open letter to the people in August. It included a basic but colorful explanation of how solar power works.

"Energy to engineers is the same as what Papago medicine men call *gewkdag*

for this reason," he wrote; "everything has some energy (*gewkdag*); it doesn't matter what the thing is, a ray of light, a rock, a cloud, a tank of gas, an electric wire, or a whisper.

"Energy, like *gewkdag*, can travel from one place to another; it can enter and leave things; it can be given or received.

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Most village dissatisfaction with the solar project seems to center around two issues: the current doesn't do everything the villagers would like, and some worry that it may keep them from getting con-

Each refrigerator has a key lock and villagers are glad to have them.

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ventional power, with its abundance.

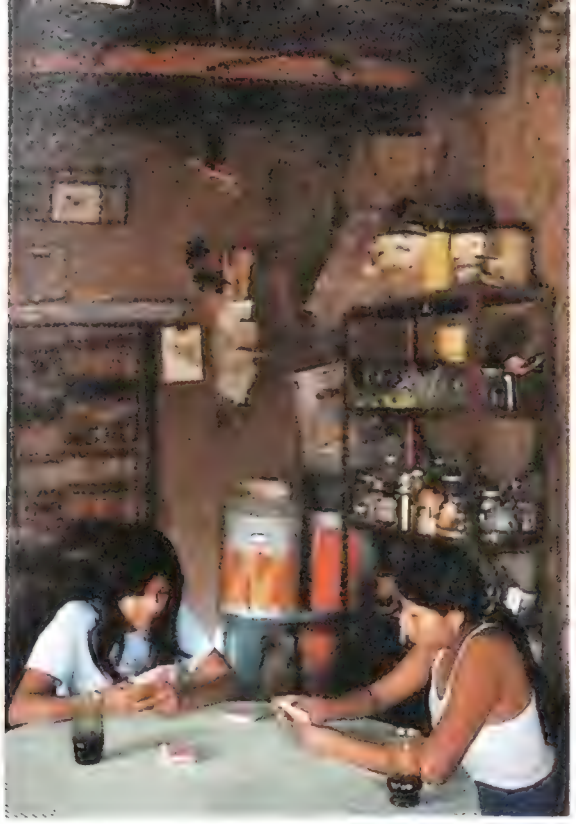
The system is small (total power was limited by funding) and puts out only direct current. So no television, no irons, no radios, and so on, and no power for the amplifiers for the people's fiestas. The television and fiestas are important to them—villagers mention them over and over. Fiestas are a central part of the life of Schuchuli, so a generator is used to help make all-night music.

Some of the villagers doubt that the Papago Tribal Utility Authority will ever bring in its poles and override the solar experiment. But the Lewis Center and the PTUA insist this isn't so—conventional power will be available when the tribe has enough money to bring it there, and then the solar experiment will be stopped.

How did the village end up with power that doesn't do much of what the people want? William J. Bifano, Schuchuli project manager at the Lewis Center, says the choices were made on the basis of a list of priorities submitted by the villagers themselves. But the list looks like someone's notion of what Anglos would like to see, not what the Papagos wanted. It starts with electric lights "for the children to study by" and ends with television.

Such is always the danger. Indians usually tell whites what they think whites want to hear, mostly out of politeness, but sometimes because whites won't understand the truth. These Papagos have been editing reality for Anglos since the first priests taught them that Communion and confession please God; they started doing what pleased the Anglo God, but quickly discovered they were also supposed to quit doing what pleased the gods they were familiar with. So they stopped telling the priests about their own ceremonies, and secretly kept on doing them.

Sun-powered Schuchuli (pop. under 100) is miles away from any utility.



Santos kids and others now can socialize, study at night, thanks to the lights.

Maybe it would be good for us Anglos to read a collection of Southwestern Indian jokes about what happens when a white man tries to help. Doubtless the book would be long, and probably funny.

As Santos sees us off, dark thunderclouds have risen in the north, brooding over the spiky ridges. A last question: Do the people still do their dances?

"Oh, yes, we had a deer dance just Saturday night. Everybody came. We have a deer hunt and dance and give a piece of deer meat to everyone."

"What is the deer dance for?"

For the first time, Santos flashes a sly, conspiratorial smile, surprisingly intimate. "Oh, it's a rain dance. We get so little here, and now is the season for it." The thunder puts an exclamation point on his sentence. Some of the old gods still speak loudly around here—the thunder and the sun, each in its appointed time.

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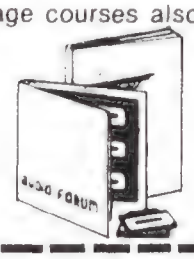

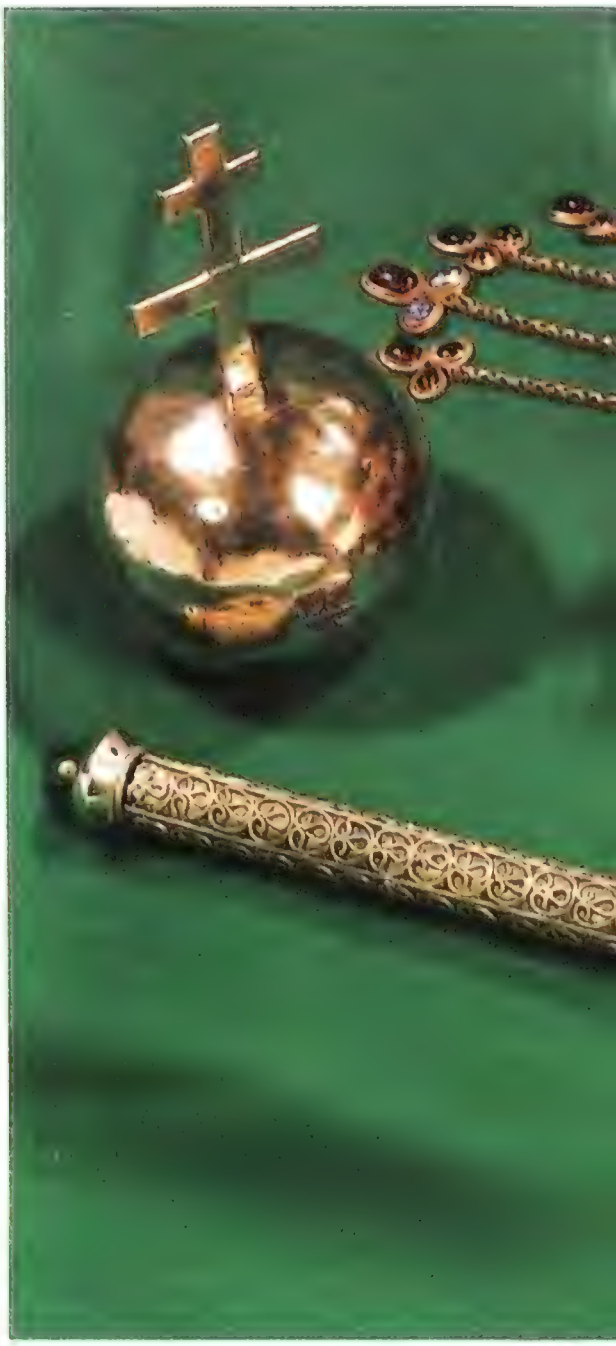

With faces reflecting bo
reverence and national pri

Text and photographs by Howard Sochurek

St. Stephen's crown evokes a mixture of piety, patriotism

The embodiment of Hungarian sovereignty, the relic draws big crowds to Budapest museum

It is ancient and a bit battered, six-and-one-half pounds of pure gold, jewels and enamel, but to the Hungarian people the Holy Crown of St. Stephen is imbued with the very bone and fabric of their nation. For a millennium it has symbolized national identity and sovereignty. Now, in the 22 months since it came back to Budapest from Fort Knox, Kentucky (where it was taken for safekeeping after World War II), more than one million solemn, awed Hungarians—every one of whom is, from birth, reputedly a "Member of the Holy Crown"—have filed through the National Museum to gaze reverently at it.

Although the coronation regalia include an ecclesiastical robe commissioned by Queen Gisela and King Stephen, an orb, scepter and sword, it is the Holy Crown which people come to see—as did I, on a fine Sunday recently. Approaching the huge 19th-century museum, I met a throng of Hungarians from all parts of the country, of all ages and backgrounds, waiting for the 10 A.M. opening. "When it first arrived," Curator Gisela Cenner told me, "people cried when they saw it."

There is a saying that "He who has the crown has Hungary." The legitimacy of a monarch's rule depended on his having been invested with it. Even during the regency of Admiral Nicholas Horthy (1920-44), it was considered a symbol of national independence and unity.

The history of the Holy Crown's origin, like the history of Hungary, is rich in legend and mystery. A cherished belief is that Pope Sylvester II sent it, probably in A.D. 1001, for the coronation of Steph-

ungarians of all ages view
e Holy Crown of St. Stephen

and other regalia. Enamels
represent Christ and apostles.

en, the first king of Hungary and the ruler who made Roman Catholicism the state religion (he was canonized in 1083).

The crown's opulent design is that of the Byzantine imperial *stemma,* or enclosed crown. Scholars have known since the late 18th century that it is a composite, assembled from elements of different ages. And after World War II an American art historian, Dr. Patrick Kelleher, was able to study it in detail. He concluded that the "lower crown," a horizontal circlet of green gold with enameled plaques, pearls and jewels, had been a gift to King Géza I from Byzantine Emperor Michael VII Ducas around A.D. 1074. Translucent enamel arc-and-gable motifs and pendant chains with stones add to its rich ornamentation.

Kelleher dates the "upper crown" from the time of St. Stephen. It consists of intersecting red gold straps encrusted with filigree, gems and pearls, as well as enamel portraits of Christ Pantocrator and eight apostles. He believes it must have been associated with Stephen, but fashioned for use other than as a crown. The surmounting gold cross, of a slightly later period, acquired its 12-degree list sometime in the 17th or 18th century.

In times of turmoil—and the Hungarian past is filled with them—the crown traveled widely. It was snatched away by pretenders to the throne (one of whom lost it in a marsh while fleeing the country on horseback in the dark of night). A ruler's widow carried it into Austria, then pawned it to Emperor Frederick III. In order to be crowned legally, King Matthias Corvinus ransomed it 23 years later for 80,000 gold florins, 77,500 more than the poor widow had received. The crown was buried—for four years—in a swamp by followers of that hero of the revolution of 1848, Louis Kossuth. In the next 100 years it was guarded so closely that the public saw it only six times.

As World War II ended and the Russians moved into Hungary, the crown's guardians spirited it away to Austria and buried it once more, this time in a forest. Asking that the U.S. government hold it as the property of the Hungarian people and not as spoils of war, the Crown Guard turned it over to the U.S. Army.

At Fort Knox the coronation regalia, triple-locked inside a 17th-century metal chest, were kept in a closely guarded vault. Successive Hungarian governments requested their return. However,

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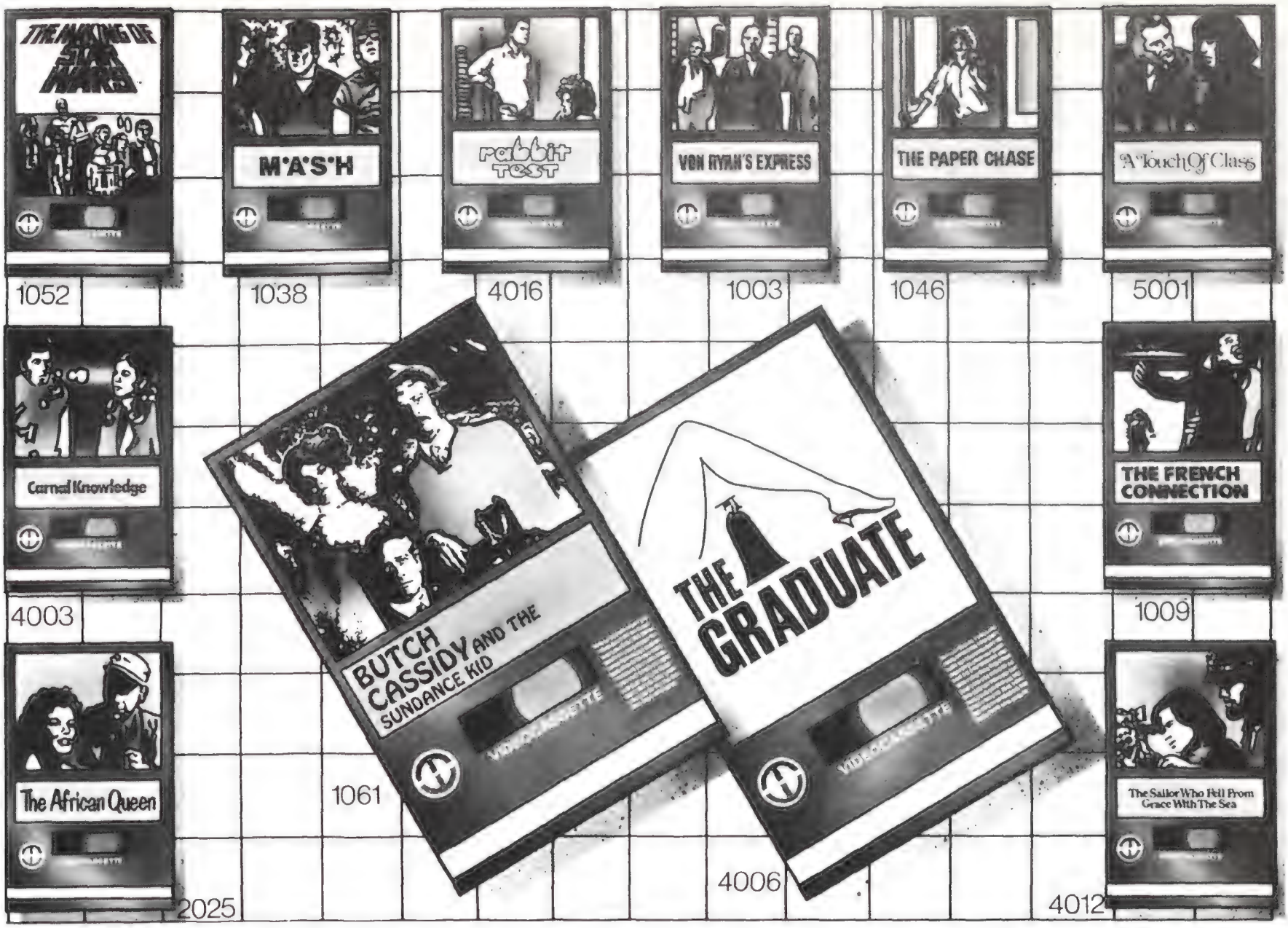
the United States wanted to be sure the Holy Crown would not be harmed or hidden away, but given dignified public display.

As relations between the two countries improved, U.S. Ambassador to Hungary Philip M. Kaiser advised President Carter and the State Department that the time for return had come. The Hungarian government was allowing greater freedoms within the country and giving permission to travel outside and even to emigrate.

Amid bitter and vociferous protest from Hungarian-Americans, many of whom had fled the troubled country since the postwar Communist takeover, arrangements were made for a ceremonial return. The Crown Delegation headed by Secretary of State Cyrus Vance included diplomats, members of Congress and private citizens. On January 6, 1978, in a moving ceremony taped for television so the entire country could look on, the Holy Crown was turned over to the President of the National Assembly as the representative of the people of Hungary.

More than a year later, watching the long line of her countrymen file by, Mrs. Cenner observed, "This is truly a crown of the people."

Stately hall in Budapest's National Museum is a fitting background for crowds filing in from the left past the glittering display.



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Greensboro (N.C.) Historical Museum

In a famous Mathew Brady portrait, 80-year-old Dolley wears widow's weeds.

By Virginia Moore

Dolley Madison—queen of society, debt-ridden widow

Our favorite First Lady lost much of what James Madison left her, but retained style and spirit

In July 1849—the year of the California gold rush—Dolley Madison's funeral cortege rode forth from St. John's Church in Washington. The procession was headed by President Zachary Taylor, followed by members of the Cabinet, Congress, the Supreme Court, the military establishment and the diplomatic corps. It was said to be the largest funeral the nation's capital had yet seen, and it was a tribute to the most popular First Lady in American history.

Dolley Madison had lived from Colonial America into the industrial age of the maturing United States. She had seen the War of Independence (Lord Cornwallis and his troops had marched past her Virginia home). She had married James Madison, chief framer of the Constitution and later fourth President. During the War of 1812 she had escaped from the White House just before British troops burned it.

She knew 11 Presidents and for 50 years had set the social tone for Washington.

Now she was gone, the "harmonizer of her day" whose head had not been turned by adulation, who thought of others before herself. And of the thousands who mourned, few knew of the desperate trials of her 13 years of widowhood.

During the 42 years of the Madisons' unusually happy marriage (begun when Dolley was 26, "Jemmy" 43) they had been inseparable. After his death in 1836, Dolley was grief-stricken. For almost a year she remained in seclusion at Montpelier (pp. 176-177), the plantation in Orange County, Virginia, which had been Madison's lifelong home and her own "beloved habitation." As sole executrix of his will, with the "sacred task" of getting his multitudinous papers copied and published, she was supported by the thought that she could still serve him.

Madison's death was not her first severe

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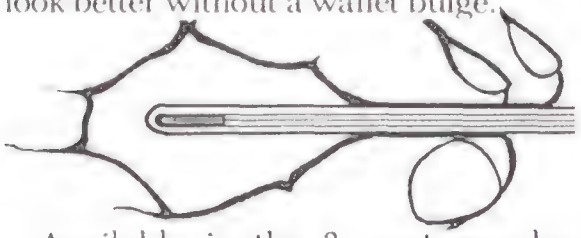

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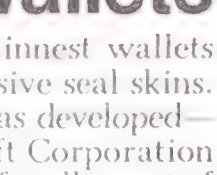

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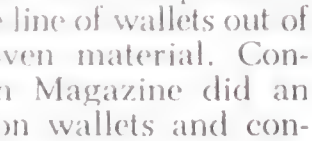

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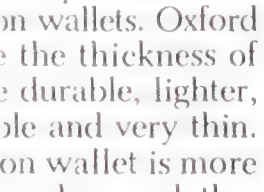

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Stuart also portrayed James Madison in 1804, when he was Secretary of State.

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Before his death at age 85, the fourth President was painted by James Longacre.

trial. Dolley Payne was 15 when her family moved to Philadelphia, where the Society of Friends eventually disowned five of its members, including her pious father (for bankruptcy). Later, her first husband, John Todd, and their second baby perished in the great yellow-fever epidemic of 1793. And after Madison's second term of office, in the ensuing 20 years at Montpelier, they endured falling prices, crop-killing droughts and battalions of guests which they then could ill afford. Virginia land values shrank because of soil exhaustion and the opening of the West. Hardest of all for Dolley was watching helplessly—after the high promise of his youth—the slow deterioration of her adored only child, John Payne Todd (p. 182), through drinking, wenching and gambling. Twice he had been thrown into debtors' prison; Madison bailed him out.

But no anguish could compare with the loss of her husband. She collapsed. No longer a sunny, outgoing, resourceful spirit with an enormous zest for life, she became a bed ridden relict.

Random memories must have drifted through her mind: perhaps the beaver hat Madison had worn while courting her; his delight when she first wore jewelry; the wicked gleam in his gray-blue eyes as he told a joke; his expert horsemanship; his white hair above a black silk robe as he talked, near the end of his life, with the English author Harriet Martineau, his face lighted with the joy of intellectual combat.

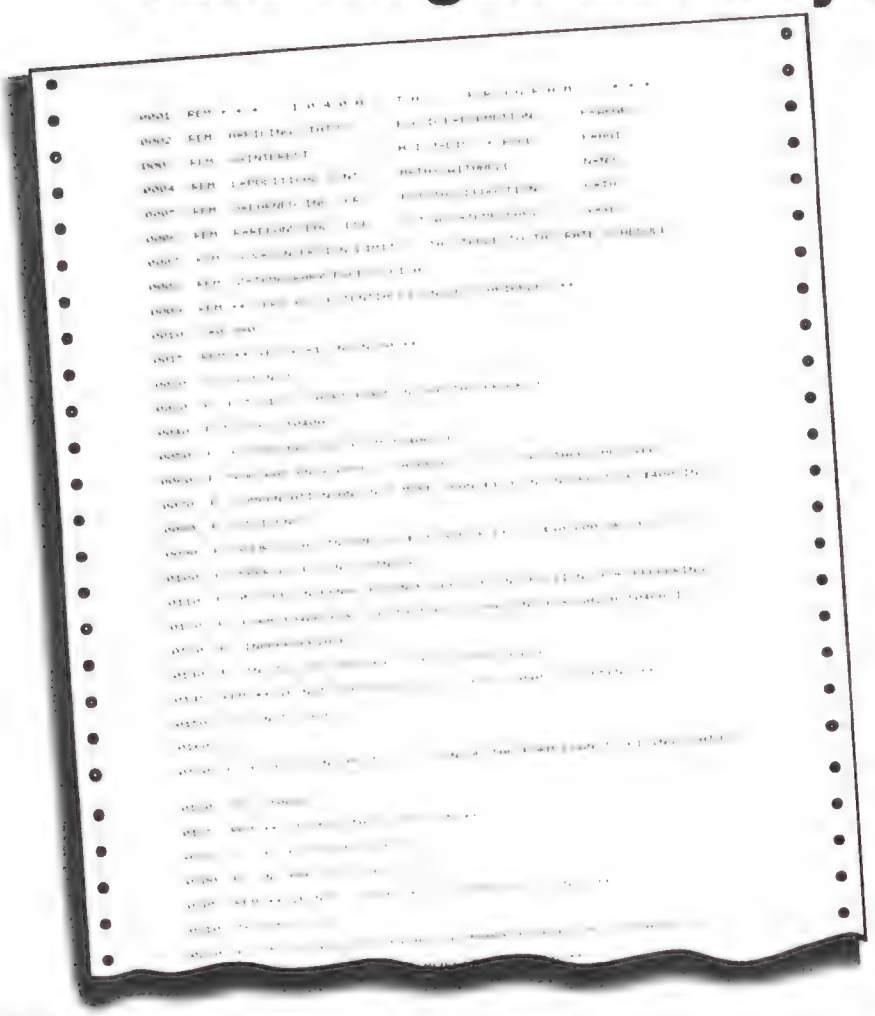
The spring after he died, Dolley's nieces brought her the first flowers. Slowly she revived, being lifted into the carriage for short drives and walked up and down the portico with its splendid view of the Blue Ridge. She learned that Congress would pay $30,000 for the first three volumes of Madison's Notes on the Debates at the Constitutional Convention of 1787, the most complete record of those historic proceedings. Although Madison had expected the papers to bring considerably more, the offer came as a relief. Now she could pay his larger bequests to Princeton, his alma mater, and the University of Virginia where he had served eight years as Rector.

The second summer of widowhood, Dolley went to White Sulphur Springs, where, amid Virginia's mountains, she drank the famous waters (smelling like rotten eggs) and watched beaus courting belles according to the strict rules of the "Billing, Wooing and Cooing Society." The trip, at least, helped her to break out into the world.

She lingered at Montpelier in the fall of 1837 to see the dogwoods turn garnet, then packed and went off with her niece Annie Payne to try some winter months on Lafayette Square in Washington. They

Miss Moore, a Virginian, is author of The Madisons, *published this year, and of a dozen previous books.*

This is the computer...



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Montpelier, Madison's Virginia estate, was left to Dolley. Unable to maintain it, would live in the two-and-a-half-story town house (pp. 178-179) which her Cutts relatives had built and Madison had acquired on a debt and bequeathed to her, along with Montpelier.

Dolley Madison's arrival in Washington was a major event. She was returning for the first time since she had left it 20 years before. Thousands remembered or had heard about Mrs. Madison's elegant taste and gowns, her brilliant levees, her charm, tact, perception and kindness.

After the year of shock, illness and retreat, she fitted into the Washington scene as though she had never left. A few wrinkles, but who cared? She still had a remarkably delicate complexion and extraordinary blue eyes.

The city had grown and some customs had changed, but society was people and the active life into which she plunged made her recovery practically complete. Former President John Quincy Adams, who had not seen her for three decades, called at once and noted in his diary that she had not changed much. President Martin Van Buren, whom Dolley had known long ago, was another who lost

Virginia State Library

e finally sold out for $18 an acre.
still remains in private hands.

little time before walking across the square and knocking on her door.

The double parlor where they sat had blue damask draperies with gilt cornices, a Wilton carpet, a red divided ottoman, black horsehair sofa, and many fine oil paintings, some depicting early Presidents. The garden out the window had a plum tree (which Dolley would learn to shake) and some currant bushes.

Soon she was dining at the White House. The Empire furniture did not appeal to her; she preferred the lighter, classical pieces which she and Benjamin Latrobe had chosen together and the British had used for kindling.

Thereafter she and the Van Buren family ran back and forth like good neighbors. A dedicated matchmaker, she introduced a young kinswoman to the President's son, who then and there fell in love. She was swamped with invitations to dinner, theater parties, balls and weddings, and on some days made as many as 30 calls. Soldiers stopped by her house to salute, and when she ran out to wave a handkerchief, they cheered (sometimes she invited them in for Madeira).

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Early watercolor shows St. John's Church and Dolley Madison's house, both still

By New Year's, when the President held his traditional open house, she was again the toast of Washington.

After the White House reception, the crowd surged across the square—this would become a custom—to pay its respects to Mrs. Madison. She stood by the fireplace, in a somewhat outmoded black velvet gown and the inevitable turban, white tulle swathing her throat, while well-wishers streamed in through the front door and out the back. Nothing could mar her personal style; she was still handsome, still, as British Minister Charles Bagot had called her long ago, "every inch a queen."

Though she enjoyed seeing old Washington friends and meeting new people, Dolley grew homesick for Montpelier. After two cold-weather absences, she went back in the spring of 1839. Her son, Payne, had a new business venture on his small farm, Toddsberth: the Montpelier Marble Company. Flush-pink marble was to be cut and sold for tabletops, mantels and floors.

But droughts spoiled the crops and the quarry's veining of quartz kept breaking expensive machinery. The end was debts and lawsuits. Payne's failure, this time not his fault, twisted Dolley's heart. She returned to Washington poorer and sadder. In addition to these setbacks, Harper's, the New York publishers to whom Payne

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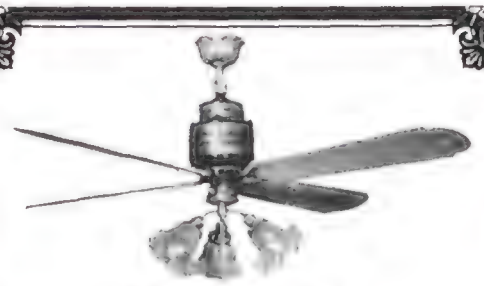

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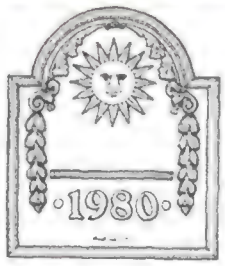
had submitted Madison's papers soon after his death—had offered only a risky costs-sharing contract for the fourth volume, among those still unpublished.

Meanwhile, President William Henry Harrison had died a month after his inauguration and been succeeded by the Madisons' old Virginia friend, Vice President John Tyler. The President's young daughter-in-law, Priscilla, substituting for the invalid First Lady, made room in her carriage for Dolley and asked her questions about protocol. Again an intimate back-and-forth relationship sprang up between Mrs. Madison and the White House (p. 180).

For some time, Dolley had been borrowing large and small sums to live on, against the day when she could sell the rest of Madison's papers. In April 1842, she took drastic action: rode the train, that fabulous new invention, to ask the richest man in the nation, John Jacob Astor (whom the Madisons had helped as a poor fur trader), to take a mortgage on her Washington house. "Riding the cars" to New York for the first time was a great experience for the 74-year-old widow. But Astor, then 79, was too ill to see her and his son wanted a banker's estimate of the property before deciding. After four months a $3,000 mortgage loan finally came through.

That summer Dolley's good friend,



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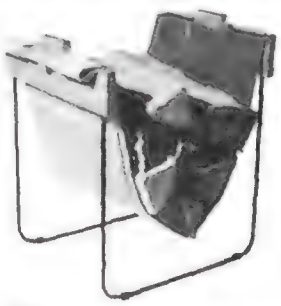

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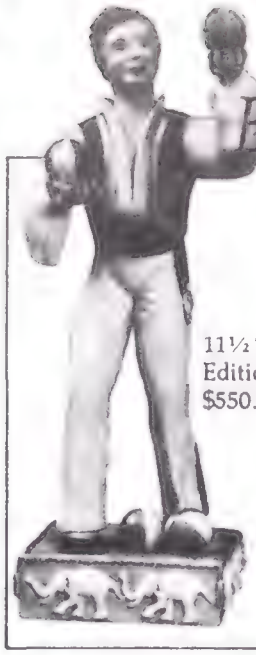

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Dolley (right, above) was invited to White House party for Tyler granddaughter.

Secretary of State Daniel Webster, who had been appointed to negotiate a treaty with Great Britain to settle the nation's long and bitterly disputed northeastern boundary, succeeded in persuading her to remain in Washington to act as a mellowing influence on the British representative, Alexander Baring, now Lord Ashburton. Dolley had known him years before as a friend in Philadelphia. The three neighbors gave dinners for each other, Ashburton's elegantly French, Webster's sumptuously American, Dolley's modest. Sometimes at twilight Ashburton strolled over to Dolley's to reminisce; other evenings all attended a Marine Band concert in the White House gardens. The treaty was signed in August.

She spent the next year and several months at Montpelier, renting out part of the big house to the family of a Richmond merchant, Henry W. Moncure, while keeping a wing for herself. It was not the happiest arrangement for Dolley.

By Christmas 1843 she was back in Washington, having invited the no longer young but attractive Mary Legaré of South Carolina to spend the social season as her guest. Dolley loved Mary; she also hoped to get Payne settled down with a good wife. She longed for grandchildren. The scheme would fail.

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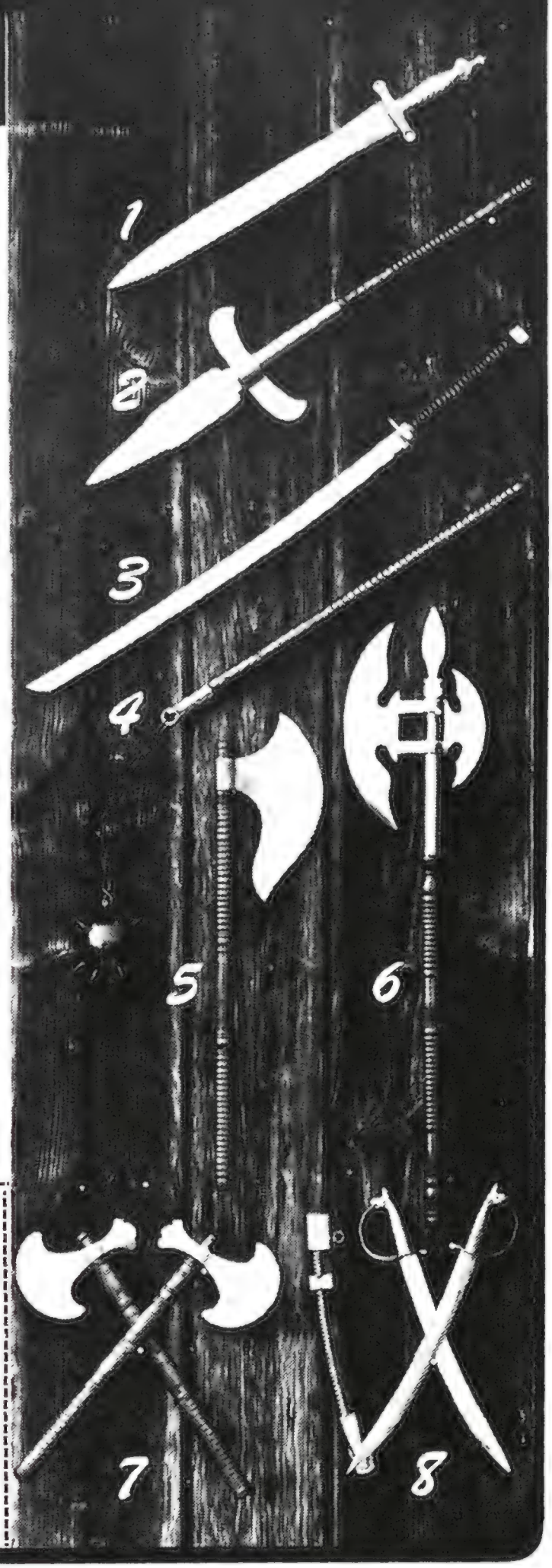

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Payne Todd, Dolley's only child (by first husband), nearly ruined his mother.

took groups of ladies to the House of Representatives to observe the goings-on from the gallery. The House voted her a seat on its floor.

Then she was one of some 200 guests whom President Tyler invited aboard the steamer *Princeton* to witness the firing of the world's largest cannon, "The Peacemaker." After lunch, when all was merry, the vessel stood off Mount Vernon to salute George Washington. And then the giant gun exploded. The Secretaries of State and the Navy lay among the numerous dead. Dolley helped with the wounded, then came home a ghost of herself, never after to speak of the tragedy.

The city could not do anything important without her. That same spring she attended the first public testing of Samuel F. B. Morse's electromagnetic telegraph. The opening message: "What hath God wrought!" The second: Dolley sent love to a cousin in Baltimore.

Meanwhile the lawsuits against Payne had multiplied. Montpelier was encumbered with liens. One day the slave Sarah wrote her "dear mistress" that the sheriff had taken Montpelier's black people, and they were sure she would not want them auctioned and separated. Dolley acted swiftly. She accepted Moncure's offer to buy the 1,017-acre, greatly diminished estate for $18 an acre, with some of the slaves, the great mansion and all the other buildings thrown in. Her home of nearly 50 years was gone.

The next three years were a heightened ordeal, though, characteristically, Dolley tried to keep her anxieties within the family. Publicly, she was still all gracious affability; privately, she struggled against overwhelming odds. Moncure had not paid his debt on Montpelier (he would stall until 1848). And Payne had moved books, furniture and slaves to Toddsberth and was building more "ridiculous" spa-like cottages around an eccentric towered "ballroom" (used for storage). He lived a slovenly, morally loose existence (the evidence lies in Payne's fragmentary, unpublished diary, where sexual references are disguised in code), distressing the mother he loved by not answering her letters.

Her little household now sank to the verge of destitution. The Daniel Websters were perceptive enough to send over baskets of provisions, and Dolley pawned and sold some valuables privately, including Sèvres plates which had once belonged to Marie Antoinette. But Dolley maintained her good cheer, fascinated with the acquisition of Texas, the Mexican War and the Oregon Treaty—pushing the nation all the way to the Pacific.

Ousted by house fire

One spring night in 1848 arsonists set Dolley's house on fire. The houseboy Ralph got the ladies and a trunkful of Madison's papers (which Dolley insisted on saving first) down the stairs through the flames. Neighbors fought the blaze with buckets of water. At 4 A.M., Dolley in nightcap was sitting on dew-wet grass, covered by her best black velvet gown which Ralph had thrown out the window. Her feet were bare and cold. But what an adventure! She was laughing.

On May 20—Dolley's 80th birthday—Congress finally came through with an offer to buy the rest of Madison's papers for $25,000—$20,000 to be controlled by three trustees lest Payne get his hands on it. A young great-nephew ran all the way from the Capitol to bring Dolley the news. Having no alternative, she accepted what struck many as insulting terms.

Her financial situation now somewhat eased, Dolley took pleasure in the July 4 laying of the cornerstone for the Washington Monument. She and Mrs. Alexander Hamilton (aged 91) sat beside President James K. Polk.

Early in 1849 Dolley was guest of

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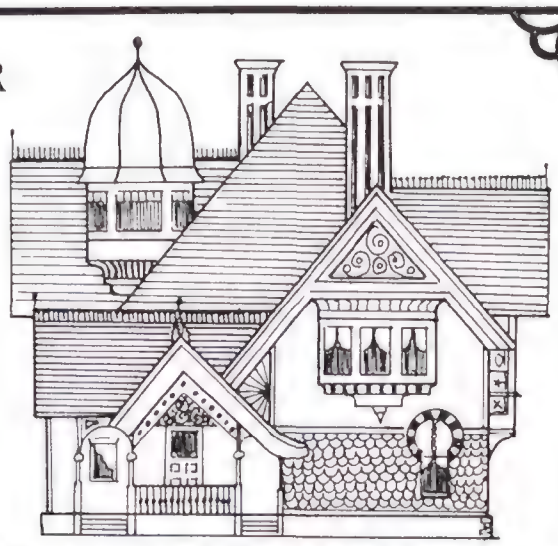

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honor at the President's last reception—and her own last public appearance. While the Polks greeted guests for three hours in the East Room, Dolley, in white satin gown and turban, sat on a raised platform where all could see her. Near midnight the President passed through all the rooms with Mrs. Madison on his arm. She was radiant.

The new President, General Zachary Taylor, was a second cousin of James Madison. Many mornings she was up early enough to see "Old Rough and Ready," a hero of the Mexican War ill at ease out of uniform, taking his daily walk in a worn high black silk hat.

But as spring advanced, Dolley slipped back. Payne came up to Washington from Toddsberth. Her "little boy," now 57, weighed 225 pounds. Often too lazy to shave, he looked grizzled and seedy. She still loved him dearly.

Dolley, in turban, sits under far right loop of chandelier in Senate gallery for last address by Henry Clay, standing, at the far left. Two seats right of Dolley is

She seemed to be detaching herself little by little. One day a niece complained about having lost something she prized. "My dear," Dolley said gently, her look intense, "there is nothing in this world worth really caring for."

More and more, she asked for old letters to be read aloud. She stayed in bed most of the time and spoke of her husband as if he were vividly present. In July she slipped into a coma; the doctors said it was "slow apoplexy." At times, when she was called, she opened her eyes. Payne was the only one who did not have to speak to gain recognition; if he merely passed through the room she murmured, "my poor boy."

After the funeral people marveled that she had lived to be 81. Something of the child had remained in this strong, wise woman. She seemed neither young nor old, being both, being ageless.

Sarah Polk, soon to be First Lady. Just left of chandelier is Henry W. Longfellow, Mrs. John Quincy Adams beside him, and J. J. Audubon three seats farther left.

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Book reviews

Italian Hilltowns
Norman F. Carver jr.
(Documan Press, $22.95; paperback, $15.95)

This is a textual and photographic essay of great distinction on folk architecture, which is human shelter as it grew naturally to meet human needs without the assistance of architects, planners or contractors. How could people—going all the way back to prehistoric times—have managed to house themselves in convivial communities without the services of these indispensable experts of today? You may well ask, knowing what you do, as you sit and ponder in your designed house, condominium apartment or converted barn, not much different from the next one down the road.

Norman F. Carver jr., an architect himself (and licensed, so to speak, to cast a stone here and there), tells us simply and knowledgeably and shows us, with superb photographs, how it was done in Italy. Some of this may explain why, through the ages, people have gone to Italy whenever they could, or stayed when they could. It is not only because of its beauty, which may be as considerable as any imaginable anywhere, but because of the meeting of people who live there with how they live there, and how the two come together. They have used what is natural to their land, shaped it to the conditions of their land and so to the condition of their lives. It is not unnatural then, that so much of life in Italy is

Artena, near Rome, reminded author of Cézanne's controlled geometry.

ON WITH THE SHOW!

There's no business like show business . . . and there's no record series like the Smithsonian American Musical Theater Series! Cast albums today are nothing out of the ordinary, but before 1943 there was no such thing. But there were the songs, often recorded by the stars, the featured players, and the composers. The Smithsonian has tracked down which stars recorded what songs for which labels—piecing out those with broadcast material and even piano rolls. The result . . . as close as you can get to experiencing the original show.

The Band Wagon—This recording recaptures the theatrical magic of Dietz and Schwartz's highly innovative musical revue. The 1931 hit features the brother-sister team of Fred and Adele Astaire (her farewell to the stage) and the lyric *Dancing in the Dark.*

Funny Face—Another Astaire hit! With brother Fred as guardian and sister Adele as his flapper ward **Funny Face** opened to raves in November of 1927. And a sibling success it was—with Ira and George Gershwin penning such memorable songs as *'S Wonderful* and *My One and Only.*

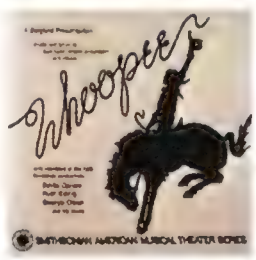
Let's Face It
Wit and elegance abound in these three Cole Porter shows. The 1941 reconstruction of **Let's Face It** features the antics of a young Danny Kaye. Selections are also included from the 1936 production starring Ethel Merman (**Red, Hot and Blue!**) and the 1938 show which introduced a demure Mary Martin (**Leave It to Me!**). *Including: Ev'rything I Love • My Heart Belongs to Daddy*

Lady, Be Good!
The original 1924 production is reconstructed with performances by Fred and Adele Astaire (one contains *his* first dancing on records) and by George Gershwin himself. The selections have been taken from several sources, including some Gershwin radio broadcasts. *Including: Oh, Lady Be Good • Fascinating Rhythm • Half of It Dearie Blues • Hang on to Me*

Oh, Kay!
A Long Island bootlegging operation is the setting for this musical written especially for Gertrude Lawrence. Frequently revived, selections from this popular Gershwin show are now available in a 1926 edition—with performances by Lawrence, Gershwin, and duo pianists Arden and Ohman. *Including: Someone to Watch Over Me • Do, Do, Do • Clap Yo' Hands • Maybe*

Souvenirs of Hot Chocolates
Featuring music composed and performed by Fats Waller, this all-black revue marked the Broadway debut of Louis Armstrong. Songs, comedy sketches, and dance numbers are all part of this night club show so opulent that it was moved to Broadway. *Including: Ain't Misbehavin' • Sweet Savannah Sue • Black and Blue*

Ziegfeld Follies of 1919
Enthusiastic audiences applauded Eddie Cantor, Bert Williams, John Steel, and the popular team of Van and Schenck in the 1919 edition of the Follies. This album features those stars performing 17 numbers, five composed by Irving Berlin. *Including: A Pretty Girl Is Like a Melody • Mandy • You'd Be Surprised • I've Got My Captain Working for Me Now*



Whoopee
Eddie Cantor, Ruth Etting, and George Olsen's band and singers are all here on this reconstruction of Ziegfeld's Wild West extravaganza. The musical program is almost complete, including an overture. *Including: Love Me or Leave Me • Eddie Cantor's Automobile Horn Song • Makin' Whoopee!*

Anything Goes
Since its 1934 Broadway triumph, this shipboard musical comedy has been an American favorite. Archival recordings made by the original New York and London cast members—including Ethel Merman—and by Cole Porter himself recreate the 1934 show. *Including: I Get a Kick Out of You • You're the Top • Anything Goes • Blow, Gabriel, Blow.*

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of a rightness and beauty which declares itself to us at once, perhaps because it is so different from the way we ourselves so often live.

Of course, a good deal of this is now more accurately described in the past tense. Thus, it is history and history is, as we know, something to learn from.

Carver tells us: "The Italians have built some of the most humane cities in the world. The archetypes for these cities were the villages and towns where, free from intellectual and stylistic pressure, the admirable fit between Italian life and the Italian landscape evolved. The purpose of this book is to document these villages and towns in part because they are inherently beautiful, in part because their unique character is in danger of destruction, and in part because their solutions to universal problems are in so many respects worth emulating." Just so.

Carver explains lucidly how this kind of building evolved and why and what it means in the daily lives of the people who made it. The book is developed in two sections, the northern towns and the southern ones, and they are as different as, well, north and south, not that one is better than the other but that each is best for where it is. Looking at the pictures and reading the text you can see exactly why this is so and marvel at the rightness of it all.

It is true that one can never get enough of Rome and Florence, Venice and Siena, Perugia, Ravenna, Verona. But now one can see an entirely different Italian pilgrimage, to these many marvelous clusters of stone. Imagine it: there are few, if any, cars in many of these towns; the streets are so narrow, the slopes so steep, the machines haven't a chance. And, of course, the villages are in trouble. They don't suit the age. Can it be possible that, as Carver suggests, the age may be somewhat at fault?

What is interesting is that it is some architects themselves (notably Christopher Alexander and his colleagues at the Center for Environmental Structure at Berkeley) who have gone back to prearchitectural architecture in an effort to learn what they have done wrong, and are teaching us something of value. That is only fair. But fairness is more and more, it seems, not a little bit to ask for and is more than one has learned to expect. High marks to Norman F. Carver jr. for

this sensitive and illuminating book, a genuine work of enlightenment.
—Bennett Schiff
Board of Editors

Wild Habitats
Aleta Karstad
(Scribners, $12.95)

On a lonely stretch of marsh road, lined with a magnificent growth of cattails, a solitary redwing blackbird is on patrol. He is on foot, both eyes riveted to the ground just ahead of him. Although he is hunting, his style is certainly not in the grand avian tradition of the flycatchers and the purple martins. No, this is a parvenu hunter, one whose beaters are the machines wrought by Henry Ford and his disciples. His dinners are supplied by whizzing automobiles. Here, a stunned grasshopper; there, a defunct dragonfly. Delectable. So goes the hunt. The occasional bumblebee, however, no matter how resolutely supine it may seem, is a morsel to be avoided. Young blackbirds learn that "dead" bees often are only stunned and have a way of coming back to life—and to sting.

Western flying squirrel
sleeps by day, "flies" by night.

Aleta Karstad has sensitized eyes. When this young naturalist goes into the field, she has the patience and good fortune to actually see such things. And for our

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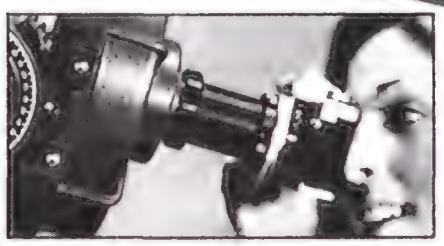

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benefit, she has brought them back in the pages of this fine book. For a year and a half she crisscrossed the continent and recorded what she saw. She has a crisp prose style, and a wonderful way with watercolor paintings and pencil sketches.

But mainly, she has eyes. Here, she has detected an orb weaver spider in a pose that seems at once to mock and glorify the tennis judge at Wimbledon, alert with a finger on the net: "It will have one foreleg positioned watchfully on a fine thread running from the web to carry the impulses of any struggle which may occur there. Pluck a strand lightly and see if the spider runs along its tightwire to see what is caught in the trap."

Based on her travels, Karstad has described 25 distinct habitats. Most of them have a familiar ring: ocean beach, bog, rainshadow forest, mountain timberline, western rain forest. And she has a few that surprised me: city, railroad embankment and burn. What sets her book apart is that she concentrates her vision on the more pedestrian and often overlooked life forms—the ground snails and slugs, the mosses and lichens. The eagles, redwoods and bears are there all right, it's just that the acorn barnacles and spleenworts, the sowbugs and muskrats, the pseudoscorpions and toads seem to be so much more lively.

She is vigilantly tuned-in to the struggles that take place in her habitats. She muses, rightly I think, that the vast tracts of highly inflammable trees, black spruce and jack pine, may have been designed as nature's firetraps. Since they cannot tolerate shade, their resin-rich needles and wood are willingly sacrificed in periodic conflagrations dedicated to the Life Force. Their cones are well adapted to fire and begin to swell in the face of advancing flames. Rising columns of smoke and hot air easily carry off the feathery, winged seeds the cones release. They will sprout after the next rain.

In another part of the forest, she sees a tree with a U-shaped bend in its trunk and reasons that a fallen neighbor, now rotted away, has done the silent craftsmanship. She sees Kokanee salmon, moribund after the final spawning run, panting on the banks of a tiny stream. Yellow jacket wasps soon begin to carve up the carcasses.

If all this sounds too pious, Aleta Karstad can quickly shift the gears of her observational instincts from those of Dar-

win to those of Marx—Groucho, that is. On the sagebrush desert, she sees a horned lark clumsily fly into the center of a tumbleweed, only to be entrapped there as the plant resumes its leisurely roll. In British Columbia, she is entranced by a dipper bird, flapping its wings under water, "flying" toward a meal of minnows, caddisworms and tadpoles.

As Franklin Ross notes in his introduction, Thoreau, a century ago, wrote that a man could either travel around the world or observe it, at ease, as it passes through his garden. He would have looked kindly on this book.

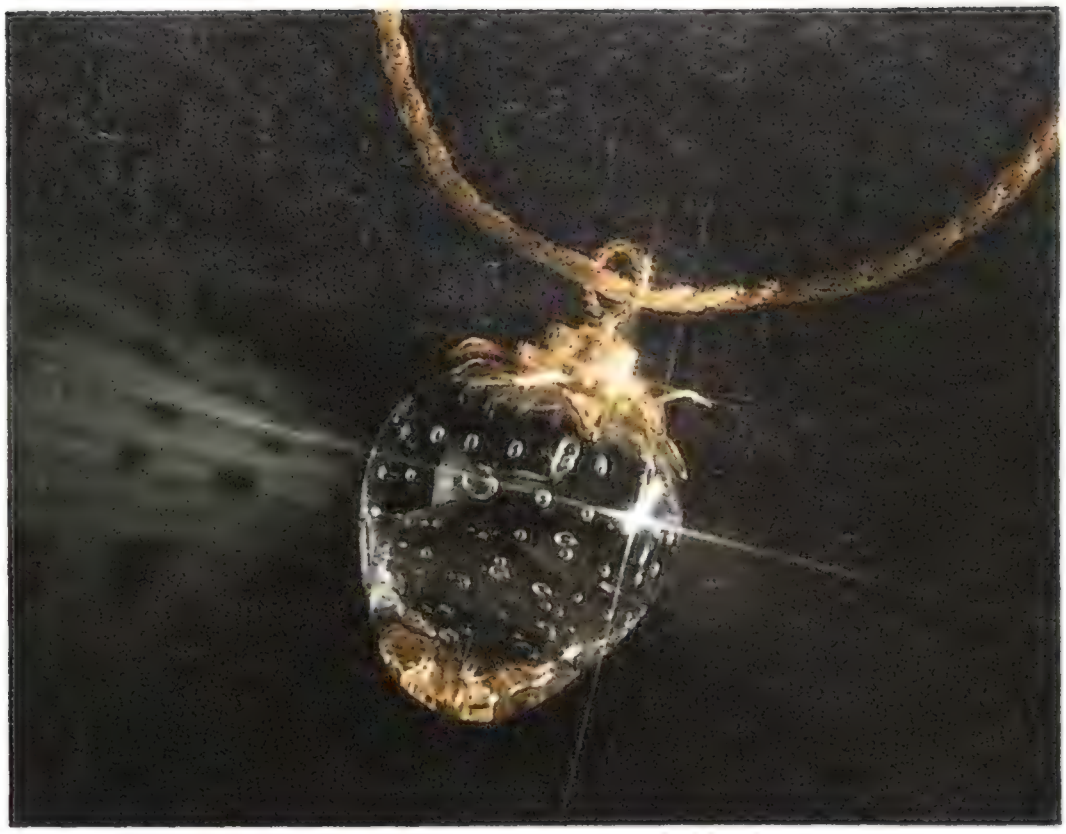
—Michael Olmert
Annapolis writer and critic

The London Yankees: Portraits of American Writers and Artists in England, 1894-1914
Stanley Weintraub
(Harcourt Brace Jovanovich, $14.95)

The "London Yankees" living in and around the "heart of the world" were a widely varied group, but they had one thing in common—the conviction that London was the place to be. Mourning the death of his daughter, the aging Mark Twain welcomed the anonymity of Tedworth Square and felt he could walk to the corner pub on busy King's Road without being "the target of curious attention." At Lancaster Gate, Bret Harte resided with the widowed Marguerite Van de Velde, while his wife Anna remained in New Jersey with their two daughters. They all lived life to the fullest, little bothered by middle-class conventions. They were restrained only by their debts and their publishers' reluctance to advance them money.

These "portraits" by Stanley Weintraub are bringing before us the forgotten and the famous. Henry Harland edits the *Yellow Book*. Pearl Craigie, the stylish daughter of the baron of the Carter's Little Liver Pills empire, writes pseudonymously as "John Oliver Hobbes." Robert Frost and T. S. Eliot, the "guy at Harvard doing funny stuff," arrive late. And, of course, Ezra Pound, the self-appointed literary agent of them all, described by his landlady as looking "rather like the good man of Nazareth," is there. It was a diverse collection of talent, and London became the pinwheel of their search for success.

Pound stated their faith in the city



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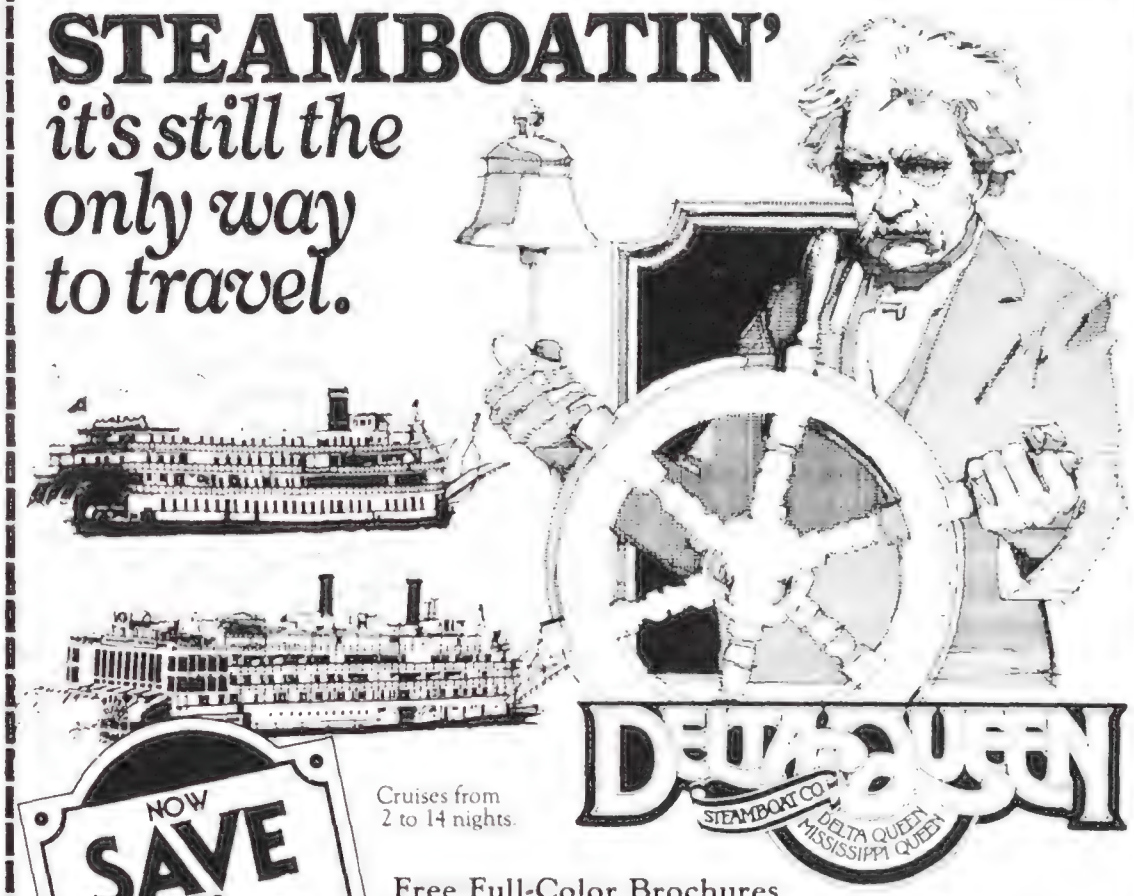

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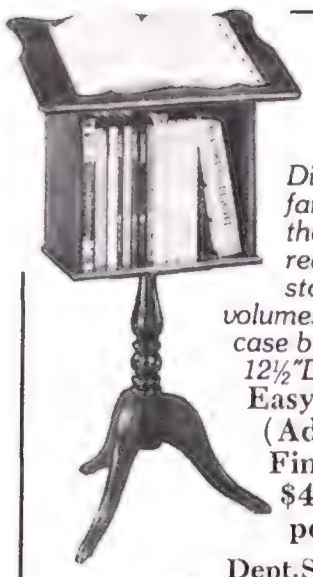
better than anyone: "There is no town like London to make one feel the vanity of all art except the highest." It was the social gatherings at which, as the impressionable Evelyn Sharp observed, the ultimate goal was to please the fastidious taste of their editors and avoid the "two cardinal sins of banality and insincerity." It was Frederick Rolfe permanently ensconced at "B4" in the reading room of the British Museum. It was established painters and struggling artists defensively clustered along Tite Street. It was even the Croydon Police Court where the ardent Christian Scientist, Kate Lyon, Harold Frederic's "other wife," was tried for manslaughter in his death.

One reads Weintraub's "portraits" questioning whether both London and England at the turn of the century were

Poet Robert Frost, approaching 40, photographed in London, 1913.

really that congenial to these American refugees. In truth, only a few of them seem to have had a comfortable existence or real success during these years. James was the most obvious exception, but he had several novels to his credit before 1894 and, except for his efforts to establish himself as a playwright, was already an established literary figure. For the others, Pound included, recognition and fame were the illusory prizes that seemed at times beyond their grasp. Yet, for all of them, London remained friendly and understanding; it had values which inspired rather than offended. And they



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had one another, united as much by their uncommon ambition as their common heritage, protected by the Atlantic from what they considered the worst features of American society—vulgar wealth, misplaced values and uncouth immigrants—a nation that sweated rather than one that perspired.

They, and their counterparts scattered across Europe, called themselves expatriates, sensitive writers and artists convinced that they could salvage their art only by leaving America. Subsequent critics have analyzed their work in terms of this voluntary exile, sometimes dismissing them as the misfits of American society, sometimes questioning the prudence or sincerity of their decision to leave America. Weintraub leaves this field to others, choosing to write about them as individuals, people who happen to be expatriates rather than expatriates who happen to be people. They are an engaging lot.

—John J. Reardon
Research professor in American history, Loyola University, author of *Edmund Randolph: A Biography*

The Arun: A Natural History of the World's Deepest Valley
Edward W. Cronin jr.
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Cronin's account begins with learning how to walk; in an area of such great altitudinal change, where no roads exist, doing something so ordinarily simple is not only a physical but a philosophical exercise. While the porters carrying 85 pounds on small-framed bodies seemingly glide effortlessly ever higher, the sahibs struggle to cover their limitations with frequent "picture-taking" rest stops.

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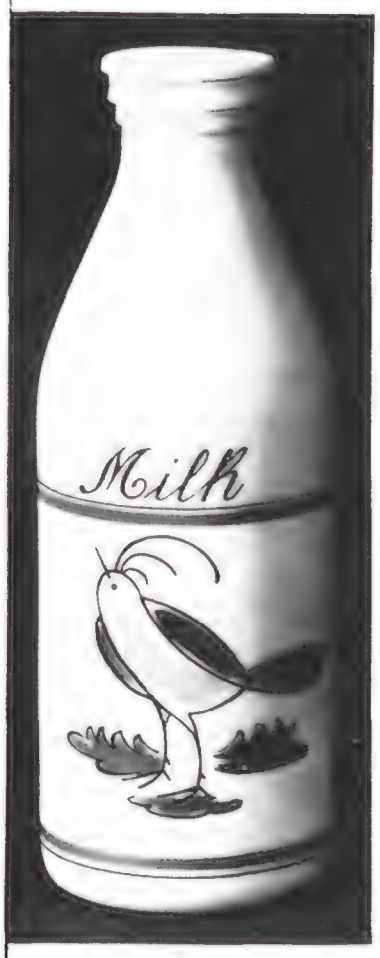

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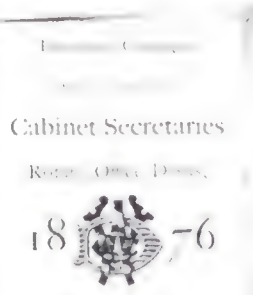

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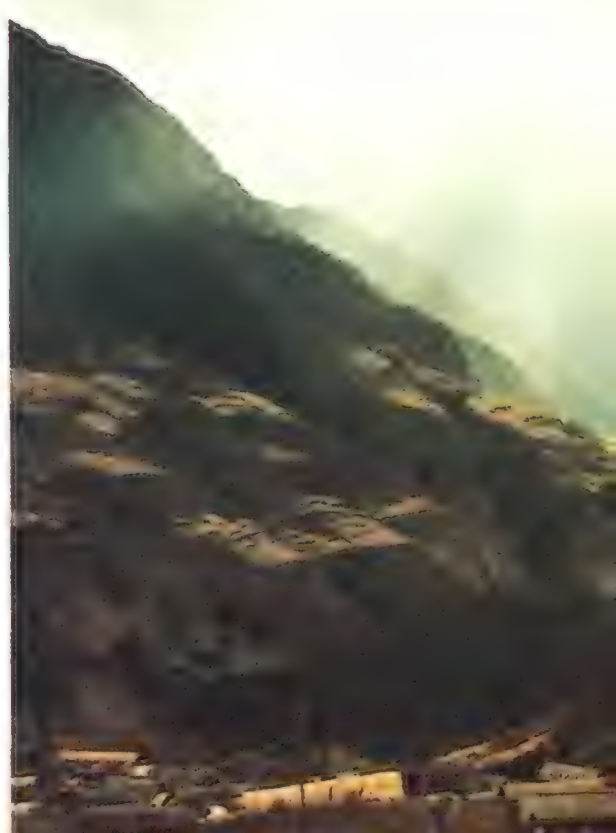
Pausing briefly to discuss some of the more esoteric aims of the expedition, Cronin carries the reader on a trip through the terraced lowlands and the cool recesses of a Himalayan oak-laurel forest to the inaccessible middle altitudes populated with some of the least known animals in the world.

Still higher, "one step from the moon" as he puts it, Cronin is convinced and convincing as he describes evidence, including footprints, pointing toward the existence of some kind of unknown Himalayan creature, the oft-debated and elusive yeti, an Abominable Snowman. "I am not saying I believe in the Abominable Snowman," he writes. "I am saying there is a real and unresolved enigma concerning a creature that walked by my tent one night."

However, for me the high point of the book is a beautiful episode on the most unlikely of all subjects, the orange-rumped honeyguide. ". . . In many distant countries there are secluded places in the mountain districts which produce beeswax. . . . There is a small bird in the shape of a sparrow. It comes in flocks of thousands to peck at (the wax). . . . They call them wax honey birds, and call them spiritual sparrows for they are entirely unable to catch them. . . ." Introducing the elusive nature of the honeyguide with a quotation from an ancient Chinese scholar, Cronin enthusiastically goes on to investigate the bird's life history, camping next to the cliff face on which it lives, chronicling its activities

Lumdumsa, a small Sherpa villag
on a rugged Himalayan slop



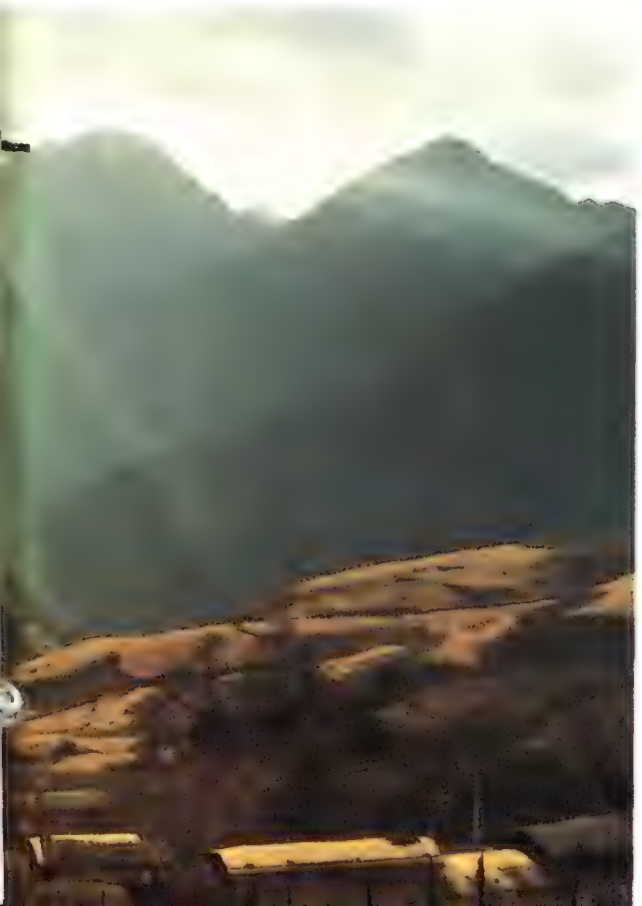
and experimenting to discern its mating habits. To complete the picture he needs to find the bird's nest, but as the monsoon arrives the honeyguide's pattern of activity becomes more and more elusive. When he recruits some local people to help in the search, it is only fitting to learn that the villagers, like the ancient Chinese scholar, also call the bird a spiritual sparrow, and tell him he will "never find the nests and eggs of the honeyguide for they don't exist."

As a counterpoint to this beautiful tale he explores a grim reality: farming practices and overpopulation are denuding the hills at an alarming rate and enormous quantities of Nepal are being washed away.

While Nepal admittedly faces severe ecological problems because of its vertical conformation, I think, in contrast to Cronin's opinion, that the Nepalese have an exemplary conservation record. Having worked for more than two years with Nepalese scientists on the problem of tiger conservation, I know they are only too aware of the dilemmas facing them and they have, of necessity, been forced to make difficult choices, that is, to establish priorities among animals and areas with which to work first with the resources available. One hopes the rich flora and fauna of the Arun, so aptly documented by Cronin, will be more widely appreciated and adequately conserved.

—*Mel Sunquist*
Smithsonian Fellow
National Zoological Park

To the author it was completely unaffected by the outside world.



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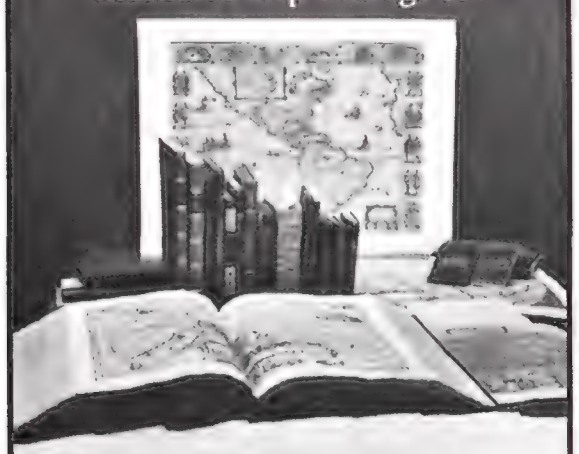

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Additional reading

China's terra-cotta army (p. 38)

"The Terracotta Army of the First Emperor of Qin (221-206 B.C.)" by Maxwell K. Hearn, *The Bronze Age of China,* Metropolitan Museum of Art (catalog of exhibition, available in April 1980)

Records of the Historian by Sima Qian, translated by Hsien-i Yang and Gladys Yang, Commercial Press (Hong Kong), 1974

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Harp seal hunt (p. 54)

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Osborn (p. 66)

Letters from the Earth by Mark Twain, Harper & Row, 1962

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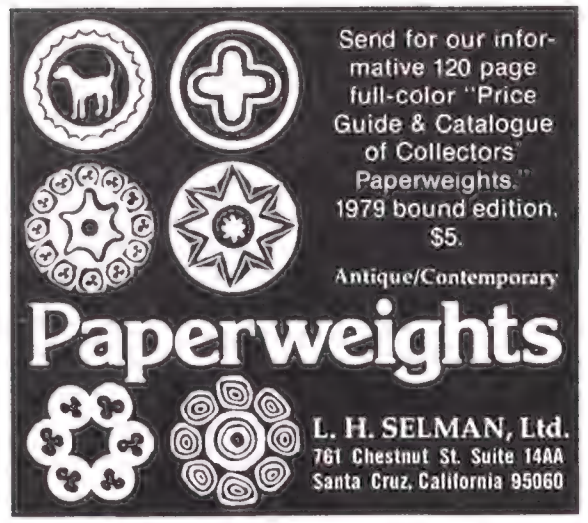
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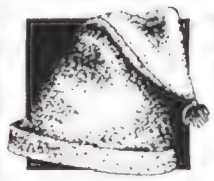

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Hogarth: His Life, Art, and Times by Ronald Paulson, Yale University Press, 1971

Hogarth's Progress by Peter Quennell, Collins (London), 1955

The Art and Politics of Thomas Nast by Morton Keller, Oxford University Press, 1975

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Thyssen-Bornemisza (p. 76)

Old Master Paintings from the Collection of Baron Thyssen-Bornemisza, International Exhibitions Foundation, 1979 (catalog of the exhibition). Available from I.E.F, 1729 H Street, N.W., Washington, D.C. 20006. $12.95 plus $1.50 postage and handling

A History of Art, A Survey of the Major Visual Arts from the Dawn of History to the Present Day by H. W. Janson, Harry N. Abrams, 1977

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Predicting the future (p. 86)

Wasn't the Future Wonderful? A View of Trends and Technologies from the 1930s by Tim Onosko, E. P. Dutton, 1979

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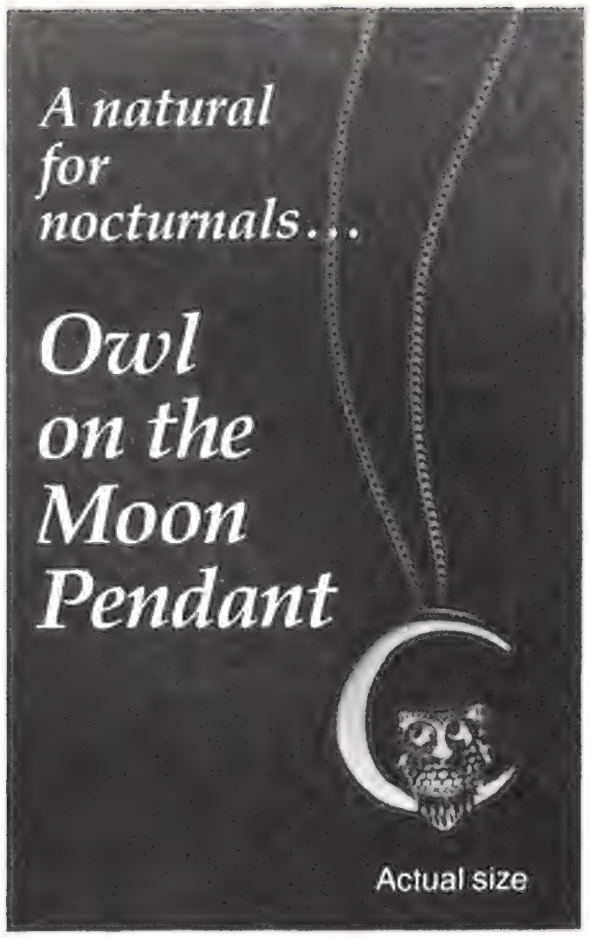
Museum of Modern Art (p. 108)

Good Old Modern; An Intimate Portrait of The Museum of Modern Art by Russell Lynes, Atheneum, 1973

"The Museum of Modern Art 50th



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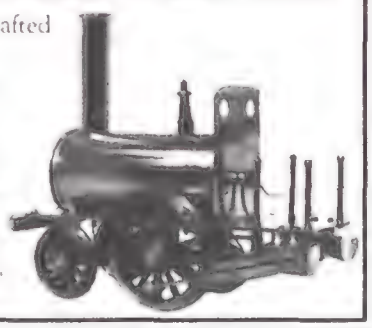

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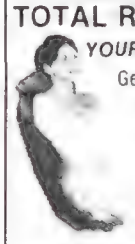

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These tours offer specialized guidance and expertise generally unavailable to persons traveling on their own:

Antiques in Atlanta—November 29-December 2: Visit the "New South" and learn about antiques at High Museum's annual antiques show.

Christmas at Smithsonian—December 7-9: Traditional tree-trimming party and special behind-the-scenes tours including private viewing of gem collection.

Virgin Islands Adventure—January 14-23 or January 23-February 1: Explore the British Virgin Islands by chartered sailboat and observe exotic life of the coral reef.

Baja Whale Watch—February 1-9 or February 9-17: Observe gray whales and marine life from a chartered sport-fishing boat. Study natural history of the Baja California coast and islands.

South Texas Wildlife—February 21-29: Follow winter bird migration to the warm climate of the Gulf and Rio Grande Valley to explore fascinating wildlife refuges.

Yellowstone in Snow—February 22-March 2: Explore Jackson, Wyoming, and Yellowstone in winter while learning about the wildlife of the surrounding region.

Smithsonian Sampler Weekend—March 7-9 or March 21-23: Join curators and staff for behind-the-scenes tours.

Tetons Winter Ecology—March 14-22: In cooperation with the Grand Teton Environmental Education Center, study the delicate balance of nature in winter. Includes cross-country skiing, day trips and evening programs.

New Orleans and Acadia—March 24-31: Learn about the history, architecture and cuisine of New Orleans plus the rich culture of Acadia.

Okefenokee Swamp—April 6-13: A wilderness adventure through the heart of this beautiful, primeval refuge with its moss-draped cypress trees and array of springtime flowers.

Big Bend—April 26-May 5: Hike the spectacular canyon trails in this southwest Texas wilderness park.

Washington "Anytime" Weekend: Choose any weekend to visit your choice of Smithsonian museums, spend two nights at Loew's L'Enfant Plaza Hotel or Hyatt Regency Washington, each close to the Mall, and see other sights in the city by Tourmobile. Reservations and payments at least ten days prior to arrival.

Coming in March: A New York Weekend.

Foreign Study Tours

These tours range in size from small group experiences to charter adventures and vary in price from low cost to deluxe, depending on the type of travel, destination visited and length of trip:

Guatemala—November 21-December 2, January 23-February 3, or February 20-March 2: Explore Mayan ruins with archaeologist. (Originates and ends in Guatemala City.)

Mayan Mexico: The Yucatán Peninsula—November 11-23, December 5-17: A complete tour of Mayan ruins of the Yucatán. (Tour originates and ends in Mérida.)

New Zealand—February 20-March 7: Tour includes talks on natural history, the Maori heritage, parliament and home visit. (Tour originates and ends in Los Angeles.)

Winter Russia*—December 28-January 11: Leningrad, Tallinn and Moscow plus optional two-day excursion to Vladimir and Suzdal; activities include gala New Year's Eve party, troika ride, visits to schools, factories, theater, circus.

Chilean Highlands—January 17-February 2: Rugged outdoor learning experience for small group. Raft down the Bío-Bío River and hike with a naturalist to glaciers, volcanoes, waterfalls and forests.

Egypt-Israel Cruise—March 17-April 7: Join noted archaeologists and anthropologists for a three-day program in Cairo and a 17-day cruise aboard the *Argonaut*. From the Red Sea port of Safâga, visit Luxor, Karnak and the Valley of Kings. From Aqaba, travel to Petra and the Wadi Rumm on the Arabian Peninsula. Transit the Suez Canal for Palm Sunday weekend in Jerusalem and Haifa. Continue to the Greek islands of Santorini and Crete, arriving in Athens for the colorful Easter celebration.

Ecuador and the Galápagos Islands—April 18-May 1: Visit Quito, then travel by train to Guayaquil to board the *Buccaneer* for a seven-day voyage through the famous Galápagos Islands. Participate in shipboard study seminars; meet with scientists at the Charles Darwin Research Station; observe the rich plant, bird and animal life.

Springtime in Greece*—May 4-20: A program in Athens and a cruise to Hydra and Aegina are followed by visits to the renowned sites of ancient civilizations when the countryside is a paradise of wild flowers. A mainland tour to the Peloponnesos, Epirus, Thessaly, the Pelion peninsula and the awe-inspiring country around Delphi, through rugged mountains with an amazingly rich array of wild flora.

Russia*—May 18-June 1: Leningrad, Tallinn and Moscow; see the Hermitage, the Kremlin and fabulous Petrodvorets Palace; visit schools, factories, clinics, theater and the unique Russian circus.

London*—May 25-June 8: A full program in London with special lectures, walking tours, theater and excursions. A five-day travel seminar into the English countryside offers a selection of areas to be visited.

Isles of Britain—May 30-June 15: From London and Southampton, circumnavigate Great Britain, with visits to Dublin, Conway in North Wales, Edinburgh and Dover. The cruise also includes fascinating lesser-known destinations in the Isles of Scilly, the Inner and Outer Hebrides, the Shetlands and the Orkney Islands.

The Wild Highlands of Scotland—May 29-June 14: In cooperation with the Aigas Field Centre, based in a Victorian castle, explore the magical scenery of the central Highland glens. Evening lectures provide a foundation for special hikes and field study of the wildlife and natural history.

People's Republic of China: 12 tours from March through October with four different itineraries: important cities and archaeological sites in the northeast; historic cities of central and southern China; Chang Jiang (Yangtze) River gorges; Xinjiang (Sinkiang) and the steppe regions of central Asia.

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The Arts of Japan—March 2-7: Prehistoric culture to the present with emphasis on the great philosophies, religions, and impact of other cultures. Includes films and tours of the renowned Freer Gallery of Art.

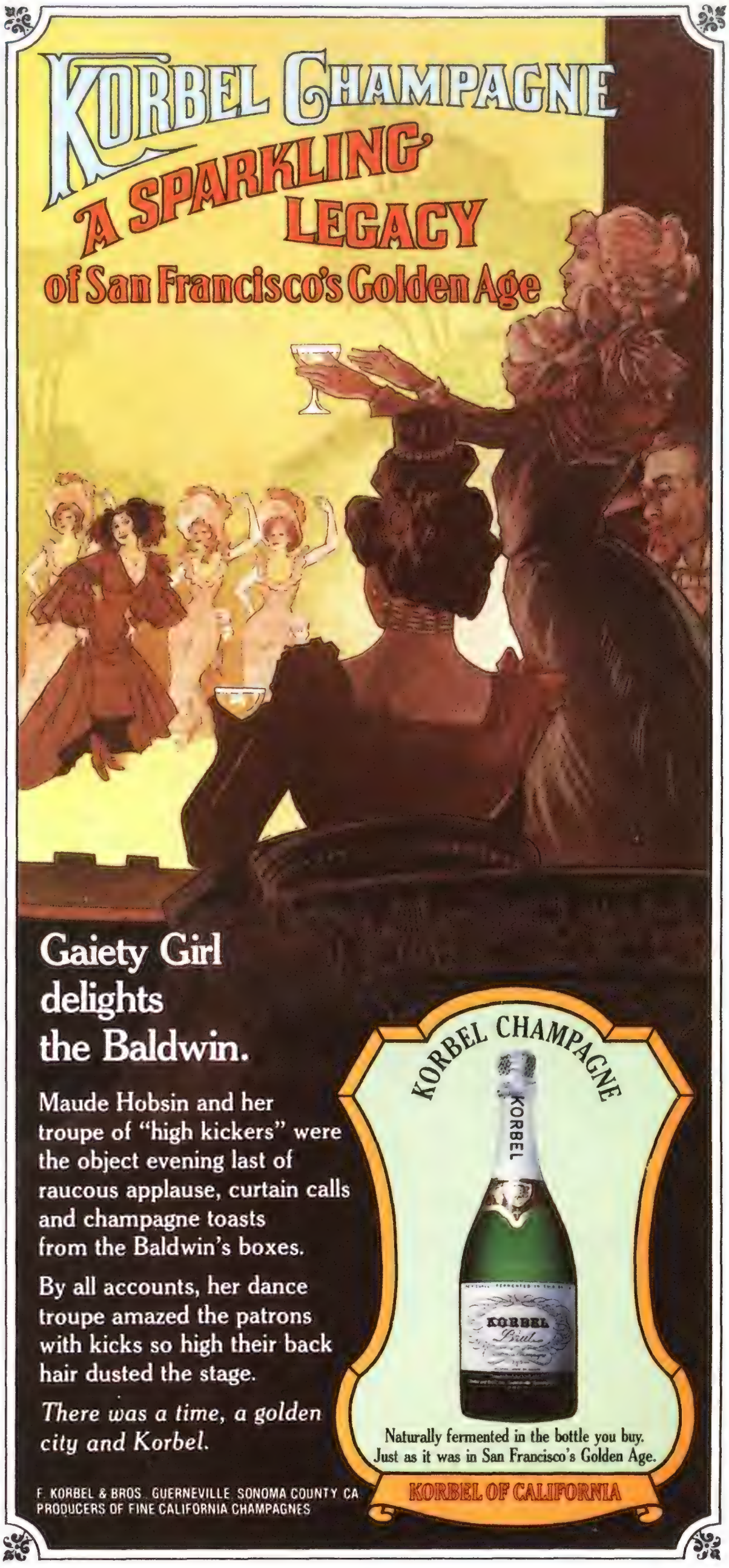
American Antique Furniture—March 16-21: Connoisseurship of masterpieces, 1650-1840. Includes color slides of great collections, detection of fakes, advice on care of antiques, as well as tours of the elegant Diplomatic Reception Rooms of the Department of State and of Winterthur Museum outside Wilmington.

China: A Cultural History—March 23-28: Prehistory to the enigmas of today, with emphasis on the intellectual and artistic traditions and the great philosophies and religions. Includes recent films and tours of the outstanding collection of the Freer Gallery of Art.

French Impressionist Painting—April 13-18: Includes tours of the many masterpieces by Monet, Degas, Renoir and other artists in the collections of the National Gallery of Art.

A Grand Tour of the Solar System—April 20-25: Leading scientists in planetary exploration at NASA share their new knowledge using spectacular slides and time-lapse films made during the most recent missions. Includes activities at Goddard Space Flight Center and the U.S. Naval Observatory.

Please send requests for full information on content, accommodations and fees by seminar title to Selected Studies, A & I 1190A, Smithsonian Institution, Washington, D.C. 20560 or telephone (202) 381-6434 for details.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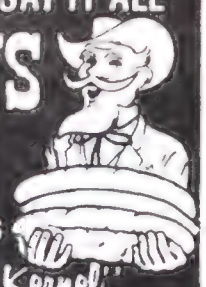

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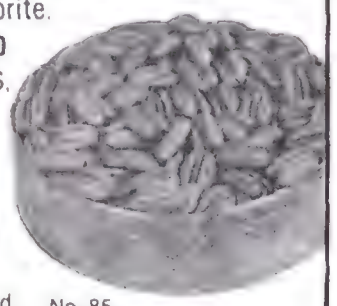

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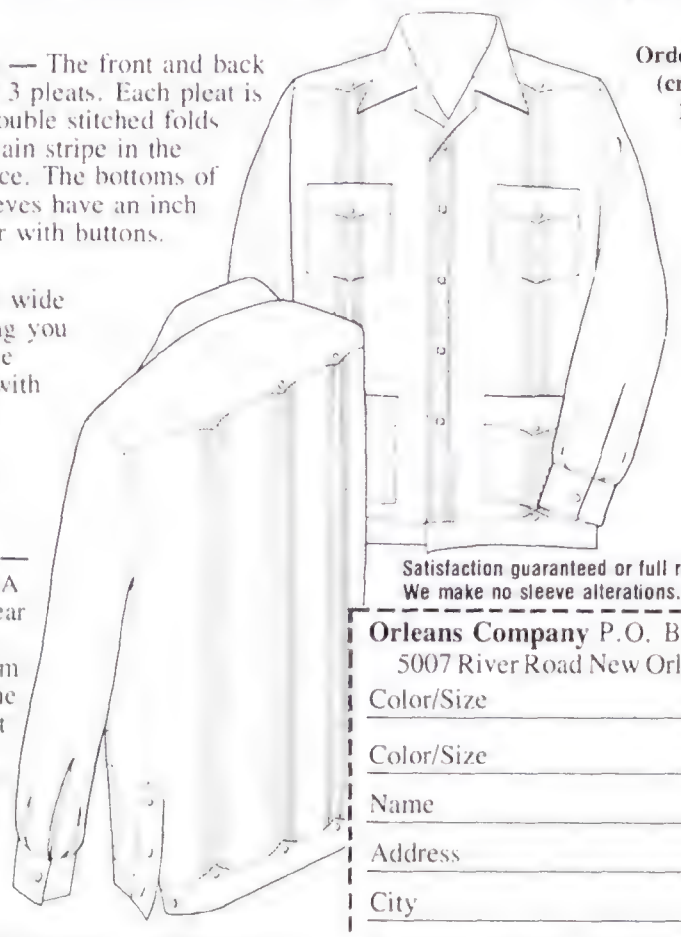

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Smithsonian highlights

The Archives of American Art, one of the quieter members of the Smithsonian family, celebrates its 25th birthday this month, quietly of course. There's a dinner in Washington, D.C., and a small exhibition of documents and photographs at the Washington Center of the Archives which stores the nation's largest collection of materials documenting the arts in America (SMITHSONIAN, June 1971).

Other selections from the Archives are being displayed at the Whitney and Metropolitan museums in New York City and at the M. H. de Young Memorial Museum in San Francisco. Also, some 80 items from the Archives supplement the Detroit Institute of Arts' current show, "John Singer Sargent in the Edwardian Age" (SMITHSONIAN, October 1979). And next spring, the Archives' New England Area Center, in Boston, plans a conference on Boston and the avant-garde.

Recent acquisitions at Freer includ

Founded in 1954 in Detroit and affiliated with the Smithsonian in 1970, the Archives stores artists' papers—some seven million items including journals, sketchbooks and photographs—as well as more than 1,200 taped interviews. The originals are preserved in the Smithsonian National Collection of Fine Arts and National Portrait Gallery building. Microfilmed duplicates are kept in five regional centers in New York, Detroit, Boston, San Francisco and Houston. The material is available to scholars and writers throughout the world through interlibrary loans. So if you need to know John Singleton Copley's recipe for varnish, the Archives has it, written in Copley's own artistic hand.

Something different is coming up, the African Heritage Tri-Museum Family Program for parents and children, ages 9-12. Cosponsored by the African Art Museum, Anacostia Neighborhood Museum and Museum of History and Technology, the program offers tours, workshops, samples of African food and even a treasure hunt. Transportation between the three museums will be provided. Dates are Saturdays, November 17, 24 and December 1, 9:30 A.M. to 2:30 P.M. For registration, call 381-4141.

Special November events

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From Light to Line in Ukiyo-e (November 13, 8:30 P.M.)—Lecture on Tokyo landscapes of Kobayashi Kiyochika (1847-1918) by Henry D. Smith II, University of California, Santa Barbara.

Hirshhorn Museum & Sculpture Garden
Oscar Bluemner: The HM&SG Collection (November 14-March 2)—From Bluemner's early academic sketches to the bold expressionistic style of his mature years.
Arshile Gorky: The HM&SG Collection, this abstract expressionist's work, with *Gorky's Aviation Murals Rediscovered,* two murals created in 1936-37 for the Newark Airport (through November 25).
Films for Children (November 3, 10, 17, 11 A.M.).
Christo: Wrappings 1963-1978 (November 15, noon; 17, 1 P.M.)—Part of film series; for schedule, call 381-6264.

Museum of African Art
The Useful Arts of Kenya (opens November 9)—Seventh annual holiday exhibition of utilitarian objects; related items for sale at museum's Boutique Africa.
19-Century Afro-American Artists—A one-gallery showing of selected works by Henry O. Tanner, Edward Mitchell Bannister, Robert Duncanson, Joshua Johnston, Edmonia Lewis.

Museum of History & Technology (MHT)
Jazz Concerts (November 16, 23, 30, December 7, noon-1 P.M.)—U.S. Navy Band's "Commodores" perform for the lunchtime crowd.
Afro-American Traditions in the Decorative Arts (through December 30).
The Red Room—Expansion of First Ladies Hall represents White House room.

Museum of Natural History (MNH)
Swedish Rock-Carvings (November 17-January 13)—Photographs of bronze-age ships, figures, carved in Gotland, Sweden.
Eskimo Narrative (through December 31)—Inuit Art, Learning Center Gallery.

Air and Space Museum
Sun: Star of Life—Conclusion of series features lecture on "The Sun and the Earth" by scientist John Eddy, November 7, 8 P.M., and panel discussion on solar energy, November 14, 8 P.M.
An Evening with Ernest K. Gann (November 29, 8 P.M.)—This pilot and writer shares some of his experiences.
Film Series (November 1, 8, 15, 7:30 P.M).
Now You See It, Now You Don't (November 3, 9 A.M.)—Monthly sky lecture focuses on stars that vary in brightness, Albert Einstein Spacearium.

Anacostia Neighborhood Museum
Out of Africa: From West African Kingdoms to Colonization (until June 1980).

advertisement

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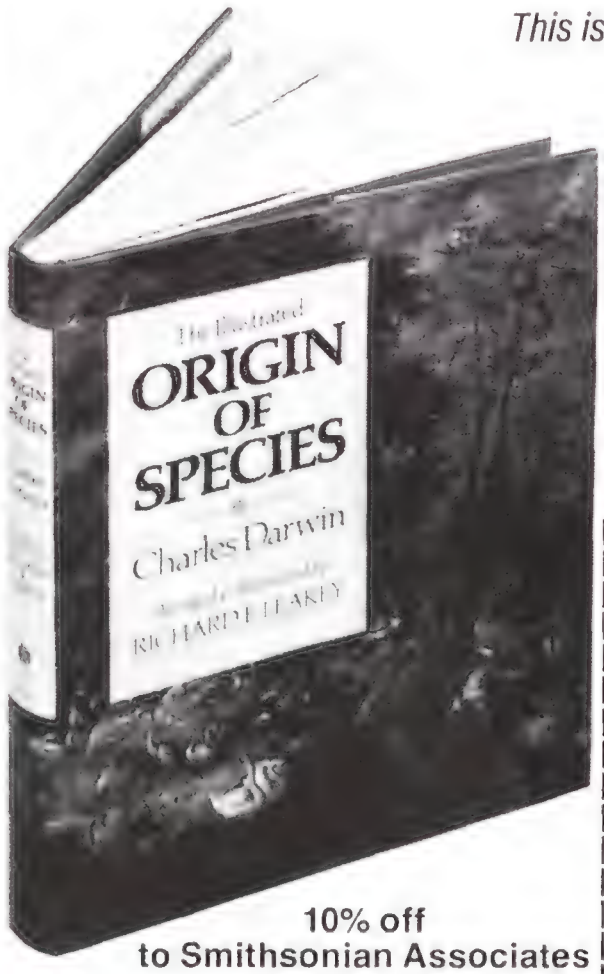

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A Program of Dance and Conversation (November 26, 27, 28, 10 A.M.)—Performances by native Anacostian Greg Reynolds and his modern dance quintet.

Cooper-Hewitt Museum (New York)
Smithsonian (through January 6)—A diversity of objects chosen from the Institution's vast collection (p. 132).
Prose and Poetry Readings (November 4, 11, 18, 3 P.M.)—Free tickets in advance.
The Cooper-Hewitt Collections: Glass (through November 25).

National Collection of Fine Arts
Hugo Robus (1885-1964) (November 30-March 2)—Major retrospective includes oils, sculpture.
After the Crash (through January 13) and *Prints for the People* (through December 2)—Art created during the Depression (SMITHSONIAN, October 1979).
Sculpture and the Federal Triangle (through January 6)—Architectural sculpture of Federal buildings.

National Portrait Gallery
Robert Edge Pine: A British Portrait Painter in America (November 1-January 6)—Some 40 portraits painted from 1784-1788, including George Washington's.
The Great Crash (through April 20)—The story of the stock market collapse.

Renwick Gallery
A Century of Ceramics in the United States, 1878-1978 (November 8-January 27)—Works by 160 artists trace the growth of ceramics as an art form.
Irena Brynner: Jewelry since 1950 (through January 13).

Smithsonian events (tickets required; 202-381-5157)

Codename: Ultra (November 1, 8 P.M., MHT)—British author Ronald Lewin discusses codebreaking in World War II.
American Furnishings from 1700-1850: Georgian Elegance and Republican Refinement (November 4, 10 A.M.-5:30 P.M., HM&SG)—American home seminar.
Photographing Nature: Kjell Sandved (November 7, 8 P.M., MNH).
The Discriminating Eye of Photographer Eliot Porter (November 11, 1 P.M., MNH).
An Evening of Animation with Faith Hubley (November 14, 8 P.M., MNH)—Producer screens and discusses her films.
Beyond the Red Brigades: Culture and Society in Contemporary Italy (November 15, 8 P.M., MNH)—A talk on present-day Italy by scholar Clara Lovett.
Saturn and the Pioneer II Probe (November 20, 8 P.M., NASM Theater)—NASA

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scientist Robert Murphy discusses breakthroughs in planetary explorations.

Division of Performing Arts
(tickets required; 202-381-5395)

Hu Hung-Yen (November 2, 8 P.M., Baird, MNH)—Chinese dance performance, but free demonstration on November 1, 8 P.M., Baird Auditorium.

20th-Century Consort (November 18, 7 P.M., HM&SG)—Chamber music.

Art Ensemble of Chicago (November 25, 6 P.M., Baird)—Jazz concert.

Show Boat (November 30, 8 P.M., Baird)—Jerome Kern's music in concert.

Membership benefits when visiting the Smithsonian

The Associates Reception Desk, in the castle, is open from 10 A.M. to 4 P.M. daily for registration, event-exhibit information and orientation material.

The Associates Lounge in the castle, a quiet place to relax, is open from 10 A.M. to 5:30 P.M. daily.

The Members' Dining Room, **"The Court,"** in the Museum of Natural History, is open Monday through Friday for lunch (11 A.M.-3 P.M.); on weekends for breakfast (8:30 A.M.-11 A.M.) and for brunch (11 A.M.-3 P.M.). Enter via Constitution Avenue for breakfast.

For pre-visit information packet, send postcard or phone Associates' Reception Center, Smithsonian Institution, Washington, D.C. 20560 (202-381-6264). Allow two weeks for receipt.

Radio Smithsonian

This music and conversation program is broadcast weekly on approximately 50 stations across the country. For details, consult your local fine arts radio station. (A different schedule of programs is heard in Washington.)

A Man of Two Cultures—British author C. P. Snow surveys the gap between arts and sciences; *The Eye of Alfred Eisenstaedt*—A talk with the famous photographer (week of November 4).

Battle of Britain—World War II aces Stanford Tuck and Adolph Galland look back on the harrowing days when they were enemies; *White on White*—A look at the art of Ben Nicholson (week of November 11).

Earth's Last Frontier—Experts discuss the science and politics of ocean policy; *America's "First" Modern Painter*—The poignant story of Alfred H. Maurer (week of November 18).

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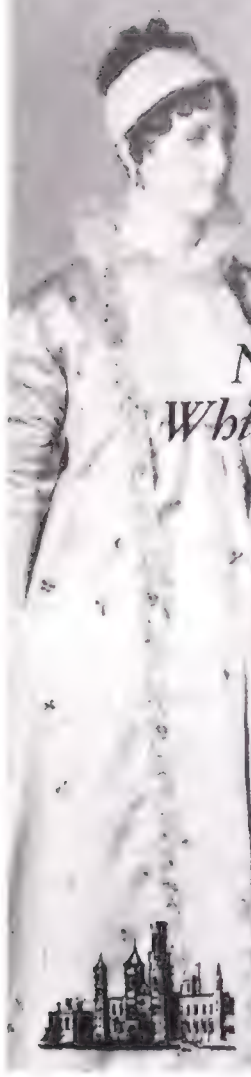

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Dynamics of Evolution—A tour of MNH's Evolution Hall; *Best of the West*—A look at the First Western States Biennial Art Exhibition (week of November 25).

Regional Events

The Smithsonian is once again on the road. The 1980 tour season of the National Associate Program's Regional Events series begins in late January with a week of lectures and workshops in Miami and Palm Beach.

Other cities on the 1980 schedule include San Antonio (March), St. Louis (April), Des Moines (April), Grand Rapids (May), Pittsburgh (September) and Anchorage and Fairbanks (October).

Programs, cosponsored by local museums, vary in each city. Lectures will cover such topics as archaeoastronomy, historic portraiture, Native American history and volcanology. In-depth seminars are planned on nature photography, horticulture and the art of biography.

National Associates in the above cities will receive invitations to events approximately one month in advance. Associates who spend the winter in Miami or Palm Beach but receive the SMITHSONIAN magazine elsewhere may request invitations by writing to: Regional Events, 1208 A&I, Smithsonian Institution, Washington, D.C. 20560.

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington, D.C. To sponsor a show in your community, write to Eileen Harakal, SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some November exhibits:

Little Rock (November 17-December 30)—*Daum: 100 Years of Glass and Crystal,* Arkansas Art Center.

Littleton, Colorado (November 3-December 2)—*Jacob Jordaens: Drawings and Prints,* Arapahoe Community College.

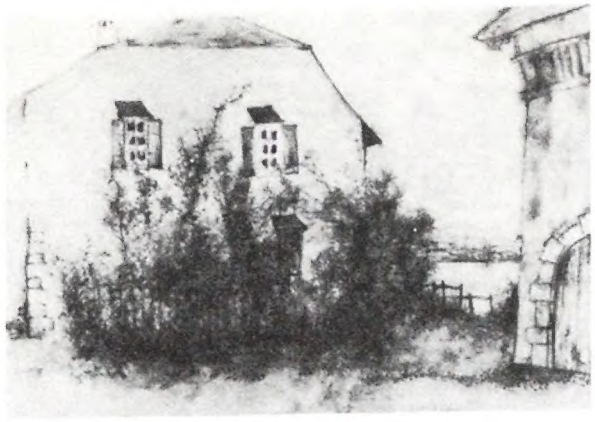
Fort Myers, Florida (November 10-December 9)—*Graficas: Contemporary Latin American Prints,* Edison College.

DeKalb, Illinois (November 17-December 16)—*Audiences of the Moon,* Northern Illinois University.

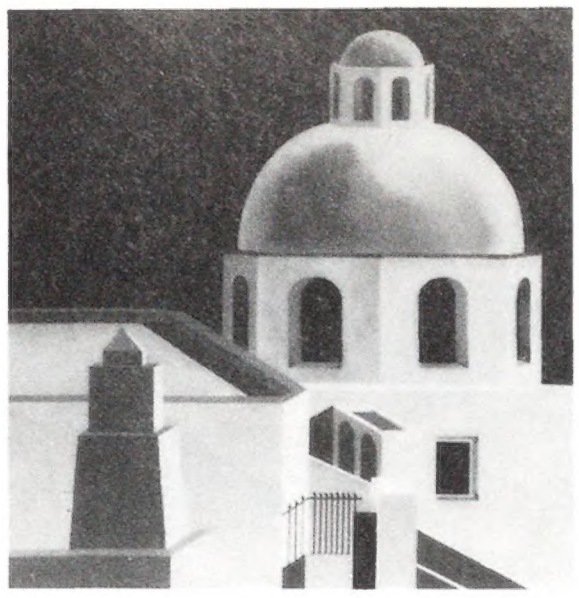
New York City (November 3-December 2)—*Art of Scientific Illustration,* American Museum of Natural History.

Dayton, Ohio (November 17-December 30)—*The Phillips Collection in the Making: 1920-1930,* Dayton Art Institute.

Oak Ridge, Tennessee (November 17-December 16)—*Quintessential Quilts,* Children's Museum of Oak Ridge, Inc.



Bernard Gantner "Ferme Savoyarde"
Original lithograph. Signed edition of 185.



William Schlesinger "Serenity"
Original serigraph. Signed edition of 195.

Marcelle Stoianovich "Deux Japonaises"
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Alyssia Lazin "Interface"
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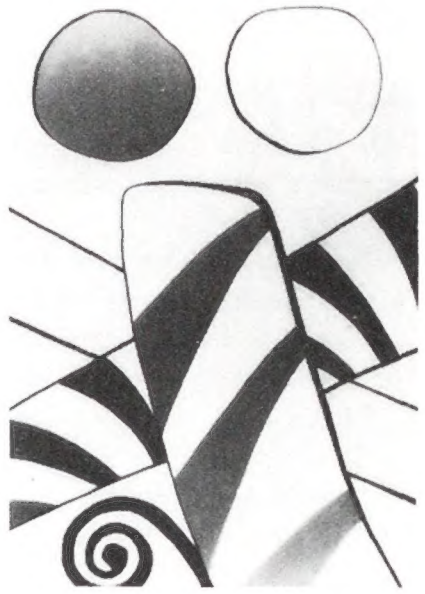
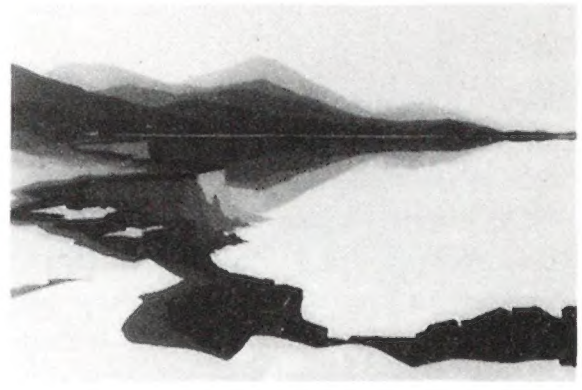


Alexander Calder "Candy Cane"
Original lithograph. Signed edition of 150.



Jerome Schurr "Monterey"
Original serigraph. Signed edition of 225.

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"I only have two pairs of hands."

They are called Malapropisms, Spoonerisms, "Archie Bunkerisms" or, simply, "tips of the slongue."

The classic Spoonerisms are, of course, attributed to the Reverend William A. Spooner, an English educator whose purported dismissal of a student is famous: "Sir, you have tasted two whole worms; you have hissed all my mystery lectures and been caught fighting a liar in the quad; you will leave Oxford by the next town drain."

But Spooner also blooped Queen Victoria. He is said to have proposed, "Let us drink to the 'queer old dean,'" referring, naturally, to the "dear old Queen." And once he announced a hymn in New College Chapel as "Kinquering congs their titles take." Another time he miscalled farmers "noble tons of soil."

Mrs. Malaprop, a character in Sheridan's *The Rivals,* was known for her misapplication of words. Archie Bunker has become a household name in part because of his TV tangles with the language, although there were famous Malaprops on radio—Gracie Allen and Jane Ace, wife of writer Goodman Ace, for instance. But the best blunders are the honest ones, uttered by amateurs of both sexes:

"I only have two pairs of hands."

"You pay what you get for."

"Oh, well, none of us are human."

"I was surprised she didn't get as much as she did."

One woman has dropped some classics over "the long hoe that [she has] rowed." Once her husband, returning from a trip, asked if she had missed him. The wheels in her head began grinding, struggling with the clichéd observation, "what is sauce for the goose is sauce for the gander." It came out a little mixed up: "Remember, when the goose is away, the mice will play."

But, after all, neither sex has a monopoly on Spoonerisms or Bunkerisms. A man I know has come up with these inadvertent gems, worthy of Sam Goldwyn:

"Let's kill one bird with two stones."

"I feel like Samson fighting Goliath."

"He's a big cheese in a little pond."

"If I only knew now what I knew then."

"You're the kink in the ointment."

Once, another present-day Spooner went shopping for a refrigerator at a discount house. He called his wife from the store about the choice of color. "Where are you?" she asked. "I'm at Frankie and Johnny's," he answered. The salesman was aghast. He grabbed the phone. "I don't know where he got that," he said. "He's at Bernie and Harry's."

One slongue-tipper has called his insurance man "Mr. Fox" instead of "Mr. Wolfe" and the family cleaning lady "Harmony" instead of "Melody." He continually mixed up a boy named "Eric" with his dog named "Cedric."

Ever hear the expression "blue-collar workers"? He calls them "blue-neck workers," perhaps thinking of "rednecks." He talks of "circles under my circles," when he means circles under his eyes. His wife got a "crockpot" as a gift and he immediately began calling it a "crackpot."

Another Mrs. Malaprop I know (no relation to any of the above) wishes she were the type who could wear one of those "feather boa constructors"; hates mosquitoes, but loves the sight of "firefleas"; got fed up with a "yoga" (yogurt) diet; and firmly believes that "If the shoe fits, try it on." Movies get her mixed up, too. *Semi-Tough* became *Semi-Pro,* and *Close Encounters of the Third Kind* became, understandably, *Third Encounters of the Close Kind.*

She likes to take "the benefit of the advantage," believes that there is "no rest for the idle" and once told her husband he looked "like a dog with his head between his tail."

Another time she called her husband a "male chivalrous pig" because he refused to dress up in "black tail." She has been a "referee" at a high school dance when all they wanted was a "chaperone."

The husband of one Mrs. Malaprop has been collecting her word slips for years. It sometimes infuriates her ("Get out of my rotten sight!" she once said).

A tongue-twisted male says he is so poor and so deep in debt that he is certain he is going to be buried in "Potter's Prison," but when he dies he hopes that he will be "incrimated."

He loves to "unravel loose ends," believes in "hitting the head on the nail" and cannot tolerate people who "bite off more than they can swallow."

His favorite Washington, D.C., restaurants are the "Suey Sands" (Sans Souci) and the "Riva Gooch" (Rive Gauche). But even though he rarely gets there, he doesn't cry about "spilled milk over the dam." Another name mix-up came up when a restaurant called "The Class Reunion" became "The Yearbook."

And he says he can't get a good night's sleep "unless my head is facing in a north, south, east and west direction," indeed difficult without a revolving bed.

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